

Tooele Chemical Agent Disposal Facility (TOCDF)



**Request for a
CLASS 2 MODIFICATION
to the
TOCDF RCRA Permit**

HAND DELIVERED

MAR 20 2008

**UTAH DIVISION OF
SOLID & HAZARDOUS WASTE
*08.01109***

Request Number: TOCDF-MPFLTM-02-0998
Request Title: Reduce MPF DAL LTM Triggers
EPA ID Number: UT 5210090002

For the:

**STATE OF UTAH DEPARTMENT OF ENVIRONMENTAL QUALITY (DEQ)
Division of Solid and Hazardous Waste (DSHW)**

1460 WEST 288 NORTH
P. O. BOX 144880
SALT LAKE CITY, UT 84114-4880

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1. DESCRIPTION OF CHANGE

OVERVIEW

The TOCDF Metal Parts Furnace (MPF) is equipped with a Discharge Airlock (DAL). Waste trays exiting the MPF Primary Combustion Chamber (PCC) upon completion of thermal treatment are transferred to the DAL where they are held until agent monitoring has been conducted. The results of the monitoring are used to confirm the agent heels remaining in munitions and bulk containers and the agent contaminating the process generated wastes have been completely destroyed before each waste tray is transferred out of the DAL to the MPF Cool-Down Conveyor. The DAL is said to be under Engineering Controls, since any emissions from waste trays residing in the DAL are vented to the MPF Afterburner. The MPF Cool-Down Conveyor is not under Engineering Controls since emissions from waste trays on the conveyor are released to the ambient air. For this reason, treated waste trays are monitored for agent in the DAL, which is equipped with controls to mitigate agent emissions, before they are transferred to Cool-Down Conveyor, which is not equipped with controls to mitigate agent emissions.

There are two types of DAL agent monitoring; each type uses the Automatic Continuous Air Monitoring System (ACAMS). The only difference in the types of DAL agent monitoring is the temperature at which the monitoring occurs. The first type of DAL agent monitoring, which is typical, occurs when the temperature in the DAL is greater than 700°F. The second type of DAL monitoring occurs when the temperature in the DAL drops below 700°F before agent monitoring begins. This type of monitoring is referred to as "Low Temperature Monitoring" (LTM). The time needed to complete the permit required agent monitoring cycle of two complete sample results for Mustard is 17 minutes. Note the 700°F LTM threshold was established for Mustard Agent during the Shakedown Period associated with the MPF 155mm Mustard (H) Projectile Agent Trial Burn (ATB).

LTM was instituted during the TOCDF VX Agent Campaign based on recommendations provided in Risk Issue Matrix (RIM) 57 titled "Monitoring in the Metal Parts Furnace Discharge Airlock". The review of this issue was prompted by an incident at Johnston Atoll Chemical Agent Disposal System (JACADS) which occurred on 12 August, 2002 when a tray of process generated waste (i.e., Secondary Waste) exited the DAL, immediately after which the DAL ACAMS went into alarm. The DAL ACAMS alarm was confirmed for chemical agents through Depot Area Air Monitoring System (DAAMS) tube analysis.

It was determined the tray was cleared to move out of the DAL because the temperature at which DAL agent monitoring occurred was so high that the minute amount of untreated agent evolving off the tray of waste was destroyed before the agent traversed the DAL to the monitor's sample probe. Conducting agent monitoring at lower temperature would ensure that if agent was present in DAL it would not thermally decompose before it reached the ACAMS sample probe and would therefore be detected.

When DAL LTM was incorporated into the TOCDF RCRA Permit, it required that DAL LTM be conducted on all waste trays containing process generated wastes which are referred to as either Miscellaneous or Secondary Wastes. It also required LTM be conducted on waste trays containing munitions and bulk containers if certain selected process parameters were exceeded. The set of process parameters selected included among others MPF PCC exhaust gas and zone temperature limits that if exceeded (i.e., temperature too high) required DAL LTM on all munitions or bulk containers in the MPF at the time of the exceedance.

The MPF PCC temperature related DAL LTM triggers are:

- MPF exhaust gas temperature as measured by Temperature Indicating Transmitter (TIT) 14-TIT-010,
- MPF Zone 1 temperature as measured by 14-TIT-152 and 14-TIT-391,
- MPF Zone 2 temperature as measured by 14-TIT-141 and 14-TIT-392, and
- MPF Zone 3 temperature as measured by 14-TIT-153 and 14-TIT-393.

The MPF PCC associated LTM temperature "triggers" were included based on an incident which occurred while TOCDF was processing GB MC-1 bombs. One bomb was fed to the MPF with a greater than five percent agent heel¹; which was the limit imposed by the RCRA permit at the time. The higher than expected temperature caused by the heat generated from the greater than expected agent heel caused the incinerator to shut down. A review of the process data showed MPF PCC exhaust gas temperature and individual zone temperatures could be used as an indication that an agent heel weight greater than five percent had been fed to the MPF. During the TOCDF VX Agent Campaign these indicators were used to confirm that a tray of 155mm VX projectiles was fed to the MPF which had agent heel weights in excess of the five percent limit.

Recent demonstrations made through the MPF Mustard Agent Trial Burns (ATBs) cause the MPF PCC temperature LTM triggers to be of no value from a compliance perspective, but rather to be impediments to MPF process control and overall operation of the furnace. Further, RCRA permit specified DAL hold times associated with the processing of Mustard Ton Containers make unnecessary these same LTM triggers.

This permit modification proposes to:

- Redefine the LTM temperature limits (i.e., the temperature at which LTM is conducted) such that there is a LTM temperature limit specified for VX and a LTM temperature limit specified for Mustard.

¹ An agent heel is the amount of agent remaining in a munition or bulk container (i.e., ton container) after some amount of agent has been removed. The amount remaining is referenced to the original nominal fill weight of the item. For example a 5% heel for a 155mm projectile initially filled with 11.7 pounds of agent would be $11.7 * 0.05 = 0.585$ pounds. For an MPF feed tray containing 48 projectiles the 5% heel weight would be $48 * 0.585 = 28.08$ pounds.

- Remove the MPF PCC exhaust gas temperature and zone temperature LTM triggers applicable to the processing of 155mm Mustard (H) projectiles. If approved, while processing 155mm H projectiles DAL LTM will occur only if the limits of LTM triggers other than those associated with MPF PCC temperature are exceeded.
- Remove the MPF PCC exhaust gas temperature and zone temperature LTM triggers applicable the processing of distilled Mustard (HD) Ton Containers (TCs). If approved, while processing TCs DAL LTM will occur only if the limits of LTM triggers other than those associated with MPF PCC temperature are exceeded. Note all Mustard TCs are subjected to LTM as a result of the permit specified DAL hold times, which are sufficiently long to ensure that agent monitoring begins after the DAL temperature falls below 700 °F.

This request is classified as a Class 2 based on:

40 CFR 270.42 Appendix I, A.4.b - *Changes in the frequency of or procedures for monitoring, reporting, sampling, or maintenance activities by the permittee: Other changes*

2. JUSTIFICATION FOR CHANGE

The justification for further defining the LTM temperature criteria so that it is specific to VX and mustard agents and the removal of the MPF PCC related temperature DAL LTM triggers associated with the processing of Mustard 155mm projectiles and TCs follows.

Defining VX and Mustard LTM Temperature Limits

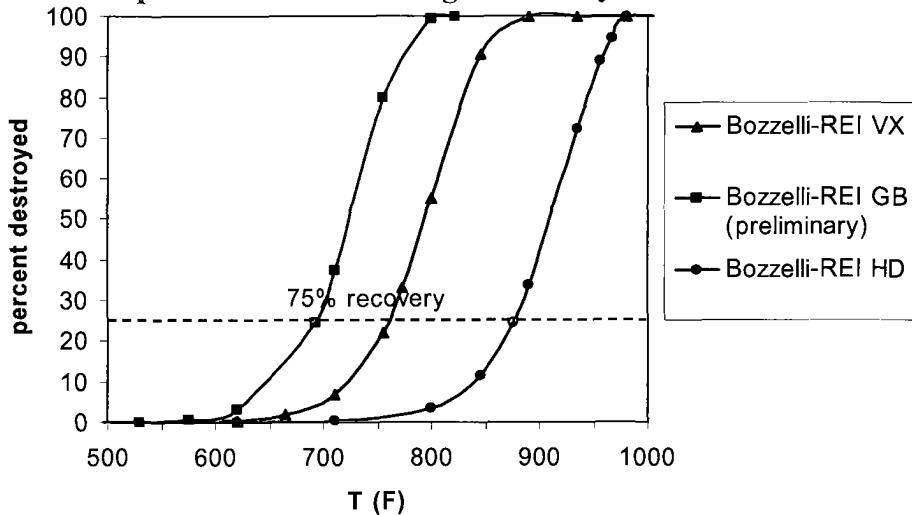
Before DAL agent monitoring can begin, the TOCDF RCRA Permit currently requires the MPF DAL to be cooled to a temperature of 600 °F for all wastes and munitions, and 700 °F for 155mm H Projectiles provided the efficacy of the 700°F LTM temperature is demonstrated during the MPF 155mm H Projectile Agent Trial Burn (ATB) Shakedown Period.

The 600 °F limitation was developed from data included in the RIM 57 report. The 700 °F limitation for mustard was also developed from data contained in the same report. These temperatures are specific to agent type and not to munition type.

The demonstration that DAL LTM conducted at 700 °F when processing mustard munitions was demonstrated during the Shakedown Period associated with MPF 155mm H Projectile ATB. This demonstration showed that mustard can be detected by the DAL ACAMS at 700°F, regardless of whether the mustard is contained in a munition, bulk container, Miscellaneous, or Secondary Waste. The results of the demonstration made for 700°F Mustard LTM and 600°F VX LTM were reviewed and accepted by the Utah Division of Solid and Hazardous Waste (DSHW).

Figure 1 is taken from the RIM 57 report and shows the change in percent agent destroyed as temperature is increased. As an example, the figure shows that at a DAL temperature of 700 °F, if mustard is still present on the waste residing in the DAL, none of the Mustard evolving off of the waste will decompose before it reaches the ACAMS, and therefore be detected. The figure show the same for VX, except the temperature which ensures all VX evolving off the wastes residing in the DAL will be detected is 600 °F. The pages from the RIM 57 report discussing the construct of Figure 1 are included in Section 4 of this permit modification request.

Figure 1: Temperature vs. Percent Agent Destroyed for the DAL at JACADS



PCC Temperature LTM Trigger and 155mm H Projectiles Processing

The MPF PCC temperature LTM triggers were implemented to serve as indicators of overfeed conditions when there was a five percent heel weight limit imposed by the TOCDF RCRA Permit. An abnormal tray of munitions containing heel weights greater than five percent would cause a higher temperature spike than usual and thus be detected by the triggering of one or more of the four MPF PCC temperature related LTM triggers. In the past, exceeding the five percent heel weight limitation was a permit violation.

The HD TC and 155mm H Projectile ATBs demonstrated the ability of the MPF to comply with the Performance Standards specified in Module VI of the TOCDF RCRA Permit while processing agent heel weights greater than five percent. The results of these ATBs were used to remove the MPF five percent heel weight feed limitation from the permit. Therefore, the MPF PCC temperature LTM triggers are no longer of any value in determining compliance with a charge weight limitation.

The 155mm H Projectile ATB demonstrated the ability of the MPF to comply with the RCRA permit performance standards while feeding 155mm projectiles that were not drained before being fed to the furnace. During this test full trays (numbering 48 projectiles per tray) of projectiles full of mustard and solid heel (each with a nominal fill weight of 11.7 pounds per projectile) were fed to MPF. Because no attempt is made to drain the 155mm H Projectiles and it is impossible to place more than 48 projectiles on a tray, there is no possibility of a single charge of 155mm projectiles exceeding the charge weight limit; the ATB demonstrated 155mm charge weight is the maximum amount of agent that can be charged to the MPF while processing these projectiles and it cannot physically be increased. Therefore, the MPF PCC temperature LTM triggers are no longer of any value in determining an overfeed condition caused by a tray of munitions containing an excess heel.

DAL LTM impacts MPF munitions processing rates because hold times in the DAL must be extended to allow treated wastes to cool to temperatures less than 700°F. To prevent the MPF PCC LTM triggers from activating, TOCDF uses the water-sprays located in Zones 1 and 2 of the PCC to keep zone temperatures below the values which trigger LTM. The avoidance of DAL LTM caused by exceeding the PCC temperature related LTM triggers is accomplished by adjusting the amount of water flowing through the water-sprays and the duration the water sprays are operated. It is possible to flow sufficient water through the water-sprays to avoid activating the PCC temperature LTM triggers. However, excessive use of the zone water-sprays causes other process interruptions.

Water added to the MPF PCC to cool the exhaust gas by its evaporation, also increases the volume and heat capacity of exhaust gas. The wetter PCC exhaust gas requires the Afterburner to add fuel gas and increase the flow of combustion air in order maintain the Afterburner exhaust gas temperature above the control set-point. The resulting increased flow of Afterburner exhaust gas causes the MPF Exhaust Gas Flow Rate Automatic Waste Feed Cut-Off (AWFCO) limit to be exceeded. High exhaust gas flow rates indicate a potential exceedance of the TOCDF RCRA Permit performance standards for metal and particulate emissions. Table 1 shows the ability of the MPF PCC zone water sprays to control the zone temperature to temperatures that are less than the LTM temperature triggers. It also shows the number of times the High Exhaust Gas Flow Rate AWFCO would be activated based on the projected MPF 155mm H Projectile ATB derived value for this operating parameter limit.

Table 1. MPF PCC Temperature LTM Trigger Control vs. Exhaust Gas Flow Rate AWFCO Occurrence

155mm Tray #	Heel	Date	ZONE 1		ZONE 2		ZONE 3		Exhaust Gas Flow Rate Hourly Average	
			14-Tit-152	14-Tit-391	14-Tit-141	14-Tit-392	14-Tit-153	14-Tit-393	max flow (kscfm)	avg flow (kscfm)
664	561.6	2/15	1453	1383	1382	1421	1484	1508	9.20	8.71
610	561.6	2/15	1419	1370	1386	1425	1480	1504	9.31	8.92
639	561.6	2/15	1436	1366	1394	1426	1482	1504	9.33	9.00
601	561.6	2/15	1433	1374	1390	1422	1484	1507	8.97	8.61
684	561.6	2/15	1424	1386	1396	1423	1481	1505	8.98	8.76
614	561.6	2/16	1443	1381	1398	1422	1485	1508	9.19	8.87
613	561.6	2/17	1485	1391	1390	1415	1484	1509	9.17	8.57
610	561.6	2/17	1452	1371	1385	1422	1491	1512	9.17	8.75
601	561.6	2/17	1472	1387	1393	1422	1481	1508	8.84	8.48
664	561.6	2/17	1456	1378	1382	1423	1479	1505	8.84	8.51
681	561.6	2/17	1464	1380	1396	1423	1483	1509	8.96	8.42
607	561.6	2/18	1437	1371	1402	1420	1478	1504	9.19	8.77
668	561.6	2/18	1442	1371	1391	1424	1479	1506	9.01	8.64
650	561.6	2/18	1457	1382	1387	1416	1477	1506	8.78	8.47
688	561.6	2/18	1433	1379	1386	1419	1485	1508	8.64	8.42
619	561.6	2/18	1422	1384	1399	1420	1482	1506	8.65	8.36
635	561.6	2/19	1469	1372	1379	1429	1480	1506	8.91	8.42
670	561.6	2/19	1440	1362	1394	1426	1484	1507	8.91	8.49
692	561.6	2/19	1439	1368	1386	1427	1481	1508	8.91	8.57
601	561.6	2/19	1472	1383	1378	1428	1482	1506	9.13	8.65
614	561.6	2/19	1471	1384	1380	1427	1482	1507	9.13	8.65
613	561.6	2/19	1454	1376	1377	1427	1480	1509	9.74	8.62
617	561.6	2/19	1487	1380	1378	1428	1483	1506	9.74	8.42
610	561.6	2/19	1491	1388	1389	1421	1481	1507		
Average (°F) ⇒			1452	1378	1388	1423	1482	1507	9.07	
LTM Setpoint ⇒			1499		1497		1551			
Anticipated MPF 155mm H Proj ATB Derived Exhaust Gas Flow Rate AWFCO Limit (kscfm) ⇒								8.96		
Indicates Occurrence of AWFCO at ATB Derived Limit ⇒										

In conclusion, the continued use of MPF PCC temperature related LTM triggers serve no purpose in determining compliance with charge weight limitations and process changes made to avoid LTM caused by these triggers conflict with ATB established operating parameter limits. PCC temperature related LTM triggers are therefore proposed to be removed from the TOCDF RCRA Permit.

PCC Temperature LTM Triggers and Mustard TC Processing

As previously discussed, the MPF PCC temperature LTM triggers were implemented to serve as indicators of overfeed conditions when there was a five percent heel weight limit imposed by the TOCDF RCRA Permit. In the past, exceeding the five percent heel weight limitation was a permit violation.

The HD TC ATB demonstrated the ability of the MPF to process heel weight as high as 630 pounds while maintaining compliance with the performance standards specified in Module V of the RCRA permit.

Mustard TCs contain both liquid mustard and solid undrainable heels. TOCDF attempts to drain as much of the liquid mustard as possible from a TC before it is processed in the MPF. TCs are required to remain in the different zones of the MPF PCC and the DAL for the times specified in the TOCDF RCRA Permit. The greater the heel weight, the longer the zone and DAL times. TCs are grouped into three processing categories based on the resulting after-drain heel weight. The feed table associated with the Permit Condition V.C.1.a.i, which regulates feed to the MPF, is shown below.

V.C.1.a.i. Chemical Agent Munitions

Waste Codes: P999, F999, D003, D004, D005, D006, D007, D008, D009, D010, D011, D028, D034, D039						
Maximum Charge Weight (lbs)²: 630*						
Mustard (H,HD,HT) Feed Rate (lbs/hr*)³: 256.8 ^{1*}						
Item Type	Zone 1 ⁴ (min)	Zone 2 ⁴ (min)	Zone 3 ⁴ (min)	DAL ⁴ (min)	Items/tray ⁴ (#)	Cycle Time (min) ³
Mustard Baseline Ton Container (Mustard lbs. per Tray) L2 is <220*	85*	10*	100*	100*	1	100*
Mustard Baseline Ton Container Mustard lbs. per tray L4 is <490*	105*	10*	120*	120*	1	120*
Mustard Baseline Ton Container (Mustard lbs. Per Tray) L6 is <630*	123*	15*	143*	143*	1	143*
Mustard 155mm Projectiles Full Tray (48 Projos) ⁵	TBD*	TBD*	TBD*	TBD*	48	55*

L6 TCs are those having after drain heel weights greater than 490 pounds and less than or equal to 630 pounds. L6 TCs remain in the DAL for 143 minutes. The DAL agent monitoring begins after the treated L6 TC has been in the DAL for 126 minutes. The time required to complete two complete ACAMS sample and analysis cycles is 17 minutes (126 minute + 17 minutes = 143 minutes DAL time).

The time required for an L6 TC which has been in MPF PCC for a total of 291 minutes, counting inter-zone tray transfer times, to cool to a temperature less than 700 °F in the DAL is on average 82 minutes (see Table 2 below). If the 17 additional minutes it takes to perform the DAL agent monitoring is added to this value the total time it takes an L6 TC to cool and undergo DAL LTM is less than 100 minutes. Mustard L6 TCs remain in the DAL for 143. Therefore, the MPF PCC temperature related LTM triggers, which when activated cause LTM to be conducted, serve no useful purpose because all Mustard L6 TCs are subjected to LTM as a result of the length of time the permit requires them to be held in the DAL. L6 TCs are held in the DAL so long that they reach a temperature of less than 700 °F by the time agent monitoring begins.

Table 2. MPF DAL Time to 700°F for Mustard Ton Container Processing Groups

Tray #	Ton Weight	Tray Type	Date processed	Time to reach 700° F	Cycle Time
L6 Ton Containers					
D-22989	603	L6	21-Sep-07	67 minutes	143 minutes
D-22899	621	L6	21-Sep-07	89 minutes	143 minutes
D-79910	625	L6	28-Sep-07	85 minutes	143 minutes
D-94917	609	L6	10-Oct-07	92 minutes	143 minutes
D-79298	624	L6	10-Oct-07	76 minutes	143 minutes
Avg.	616.4			81.8 minutes	
L4 Ton Containers					
D-38386	476	L4	28-Sep-07	91 minutes	120 minutes
D-16423	359	L4	30-Sep-07	76 minutes	120 minutes
D-8204	323	L4	30-Sep-07	89 minutes	120 minutes
D-651	255	L4	1-Oct-07	85 minutes	120 minutes
D-38651	266	L4	1-Oct-07	85 minutes	120 minutes
Avg.	335.8			85.2 minutes	
L2 Ton Containers					
D-47624	186	L2	29-Jan-07	59 minutes	100 minutes
D-50365	214	L2	29-Jan-07	61 minutes	100 minutes
D-634	169	L2	29-Jan-07	87 minutes	100 minutes
D-14634	219	L2	29-Jan-07	64 minutes	100 minutes
D-1696	153	L2	29-Jan-07	60 minutes	100 minutes
Avg.	188.2			66.2 minutes	

L4 TCs are those having after drain heel weights greater than 220 pounds and less than or equal to 490 pounds. L4 TCs remain in the DAL for 120 minutes. Continued use of the MPF PCC temperature related LTM triggers serves no useful purpose for the same reasons as discussed above. Once in the DAL it takes treated Mustard L4 TCs on average about 85 minutes to reach a temperature less than 700 °F. This time plus the 17 minute agent monitoring time equal 102 minutes (see Table 2). L4 TCs are required to remain in the DAL for 120 minutes. All L4 TCs are subjected to LTM because of the permit specified DAL hold time. The DAL hold time for L4 TCs nullifies the need for the MPF PCC temperature LTM triggers.

L2 TCs are those having after drain heel weights of less than or equal to 220 pounds. Continued use of the MPF PCC temperature related LTM triggers serves no useful purpose for the same reasons as discussed above. Once in the DAL it takes treated Mustard L2 TCs on average about 66 minutes to reach a temperature less than 700 °F. This time plus the 17 minute agent monitoring time equals 83 minutes (see Table 2). L2 TCs are required to remain in the DAL for 100 minutes. All L2 TCs are subjected to LTM because of the permit specified DAL hold time. The DAL hold time for L2 TCs nullifies the need for the MPF PCC temperature LTM triggers.

IMPACT TO THE TOCDF

If approved this permit modification will have positive impacts to TOCDF MPF operations

Environmental Impacts

This change will have a positive impact on the environment since the number of furnace upsets experienced while processing Mustard 155mm Projectiles and TCs will be reduced. Excessive use of the water sprays to avoid LTM results in increased exhaust gas flow rates which cause High Exhaust Gas Flow Rate AWFCOs.

TOCDF Personnel Impacts

There will be no impact to TOCDF personnel should this permit modification request be approved. No change is proposed to the methods used to monitor the MPF DAL for agent, and no change is proposed to the DAL hold times which are currently specified in the RCRA Permit. The purpose of this modification request is to remove DAL LTM triggers that are no longer of any use; their original purpose has been made null because of ATB demonstrations and the methods of processing shown to be successful through these demonstrations.

Physical TOCDF Impacts

There are no physical impacts to the facility. If this modification request is approved changes to the MPF Programmable Logic Controller (PLC) code and function tests will be required; the function tests ensure the code changes caused the MPF to operate as expected.

3. PERMIT CHANGE PAGES

Change Pages in Permit Body

Module V, Pages 19 and 20

Change Pages in Permit Attachments

Attachment 22, Page 23

Changes to Permit Drawings

None

- V.C.2.q. Scrubber liquid effluent shall not reach or exceed 1.14* specific gravity units, over a twelve hour rolling average.
- V.C.2.r. The MPF Discharge Airlock shall be cooled to less than 600° F when processing VX wastes, munitions, or bulk containers, or and 700°F when processing, mustard wastes, munitions, and bulk containers(for 155mm mustard projectiles if demonstrated during shakedown and trial burn period) and monitored via low-temperature monitoring in accordance with Attachment 22 monitoring procedures if any of the following upset alarms occur as specified in the table below for the ~~mustard~~-munitions/bulk containers in the furnace at the time of the upset. In accordance with V.C.1.a.ii.a, all secondary waste trays will be “low-temperature monitored” regardless if the following upset alarms occur.

Tag Number	Limit	Descriptions
14-TIT-152 or 14-TIT-391	$\geq 1,528^{\circ}\text{F}$ (Baseline TC) $\geq 1499^{\circ}\text{F}$ (155mm H Projos) Note 1	Furnace Temperature (Zone 1)
14-TIT-141 or 14-TIT-392	$\geq 1,464^{\circ}\text{F}$ (Baseline TC) $\geq 1497^{\circ}\text{F}$ (155mm H Projos) Note 1	Furnace Temperature (Zone 2)
14-TIT-153 or 14-TIT-393	$\geq 1,561^{\circ}\text{F}$ (Baseline TC) $\geq 1551^{\circ}\text{F}$ (155mm H Projos) Note 1	Furnace Temperature (Zone 3)
14-TIT-065 or 14-TIT-069	$\leq 800^{\circ}\text{F}$	MPF Afterburner Temperature Low-Low
14-TIT-065 or 14-TIT-069	> 2175° F	MPF Afterburner Temperature High-High
14-PDIT-786	≥ 1.2 in. w.c.	Afterburner Exhaust Gas Velocity Pressure High
14-AIT-384m	≥ 1000 ppm 1- minute average. Correct to 7%-O ₂ , dry volume	Blower Exhaust CO Concentration. Average of 4 consecutive data points excluding points of calibration. Approximately 1- minute average.
24-AIT-669m	≥ 1000 ppm 1 minute average. Correct to 7%-O ₂ , dry volume	Blower Exhaust CO Concentration. Average of 4 consecutive data points excluding points of calibration. 1- minute average.
14-AIT-082	$\leq 3\%$ O ₂	Blower Exhaust O ₂
14-AIT-082	$\geq 15\%$ O ₂	Blower Exhaust O ₂ 60 second delay
24-AIT-670	$\leq 3\%$ O ₂	Blower Exhaust O ₂
24-AIT-670	$\geq 15\%$ O ₂	Blower Exhaust O ₂ 60 second delay
PAS 703AH/BH	≥ 0.2 SEL for Mustard. Malfunctions not included.	PAS Blower Exhaust Agent Detected
PAS 707 AH/BH/CH	≥ 0.2 SEL. Malfunctions not included.	Common Stack Exhaust Agent Detected
14-TIT-010	$\geq 2,385^{\circ}\text{F}$ Note 1	Primary Chamber Exhaust Temperature. Mustard Ton Containers

¹ To Be Determined during shakedown per an approved DAL monitoring plan. Not required for Mustard Ton Container or 155mm Projectile Processing

people in the location of the ACAMS need to mask. ACAMS that have the horn disconnected must have a sign at the ACAMS indicating such.

22.29

ACAMS ALARM LEVEL

22.29.1

The set point for the ACAMS agent alarms is specified in the monitoring station tables (Attachment A). Due to the design characteristics of the ACAMS and the software that operates the alarm, there may be slight variations in the actual alarm level for each ACAMS.

22.30

PORTABLE ACAMS and DAAMS MONITORING TRAILERS

22.30.1

There are a minimum of two Portable Monitoring Trailers housing ACAMS and DAAMS at TOCDF. They are for special short-term monitoring to support short-term activities.

22.31

CARBON FILTERS ON ACAMS

22.31.1

In special circumstances, an ACAMS purpose is not to provide monitoring on a continuous basis (e.g. ACAMS for monitoring ONCs, and ACAMS for monitoring charcoal change-out at the Filter Farm.) When these types of ACAMS are operating but not sampling the area for which they are intended, a charcoal filter may be installed at the ACAMS.

22.32

MPF DISCHARGE AIRLOCK (MPF DAL) ACAMS and DAAMS

22.32.1

The ACAMS for the MPF Discharge Airlock samples filtered air except when monitoring the discharge airlock. Low-temperature monitoring protocol requires the DAL to be cooled to less than 600° F prior to agent monitoring for VX wastes, munitions, and bulk containers or and 700° F for mustard wastes, munitions, and bulk containers (for 155mm mustard projectiles if demonstrated during shakedown and trial burn period). High-temperature monitoring is defined as greater than 600° F for all VX wastes, and munitions, and bulk containers except for mustard 155mm projectiles which is and greater than 700°F for mustard wastes, munitions, and bulk containers.

22.32.2

All secondary wastes that are processed are monitored via low-temperature monitoring.

22.32.3

During monitoring, if the ACAMS alarms, the item is moved back into Zone 3 for additional processing time for a minimum of 15 minutes.

22.32.4

The Permittee has the option to perform low-temperature monitoring instead of high temperature monitoring on any munitions or bulk container.

22.32.5

If processing VX secondary waste the V/G conversion pad assemblies for both the ACAMS and DAAMS will be changed prior to monitoring each tray. Sample line challenges will be performed at 1.0 VSL at a minimum of once every 12-hour operating shift, within four hours from the start of the shift while processing for both ACAMS and DAAMS.

22.32.6

Reserved.

22.32.7

Reserved.

22.32.8

MPF DAL maintenance of the sampling systems shall follow the procedure in Attachment 3 (Sampling, Analytical and QA/QC Procedures) for the ACAMS and DAAMS systems.

22.33

ACAMS and DAAMS AT EQUIPMENT HYDRAULIC MODULE

22.33.1

The ACAMS and DAAMS at the Equipment Hydraulic Module (EHM) Station #EHM 354, only monitors the EHM when personnel are inside the EHM. An alarm light is

4. SUPPORTING INFORMATION

4.1 Supporting Information from RIM 57

4.2 DAL Temperature Data for Ton Container Processing Groups

Section 4.1

Supporting Information from RIM 57

RISK MANAGEMENT PHASE 2 – DRAFT REPORT

"The views, opinions and other findings contained in these reports/drawings are those of the authors/designers, and must not be construed as an official Government opinion, policy or decision. These documents/drawings were prepared as pre-decisional input to the PMCD for limited, and authorized distribution only. They have not been approved for public release."

CHEMICAL STOCKPILE DISPOSAL PROGRAM

RISK MANAGEMENT PHASE 2:

RISK ISSUE INVESTIGATION and DEVELOPMENT OF RECOMMENDATIONS

RIM 57 Monitoring in the Metal Parts Furnace Discharge Airlock

FINAL REPORT

March, 2003

Prepared for:

PROJECT MANAGER FOR CHEMICAL STOCKPILE DEMILITARIZATION

Prepared by:

Washington Demilitarization Company
1311 Continental Dr., Suite G
Abingdon, MD 21009

Southwest Research Institute
6220 Culebra Road
San Antonio, Texas 78238

and

EG&G Technical Services, Inc
900 Clopper Road, Suite 120
Gaithersburg, MD 20878

Technical Points of Contact:

Mr. Leo O'Shea, WDC/WGI, 401-612-2202
Mr. Paul Wiggins, EG&G, 303-843-3034

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3 PHASE 2 RESULTS

3.1 Decomposition Kinetics of Agents VX, GB and HD at DAL Conditions

Although the root cause of the 12 August, 2002 metal parts furnace DAL unusual occurrence was noncompliance with tray loading procedures, the failure of the ACAMS to detect VX above the Limit of Quantification (LOQ) until the tray was returned to the DAL raised concerns about the effectiveness of the monitoring system in the DAL. During the investigation of the Metal Parts Furnace (MPF) occurrence, a failure mode analysis identified thermal degradation of VX as one explanation for the failure of the monitoring system to detect VX during the initial DAL cycles. In essence the hypothesis was that, even if VX vapors were being generated from the waste, the high temperatures in the DAL caused the VX vapor to be degraded in the 30 seconds (approximate) it took to reach the conversion pad in the ACAMS sampling system. This hypothesis was based on calculations using data in a 1962 Cornell Aeronautical Laboratory report on the thermal decomposition of VX (Lapp, R.R and Schneider, C.J.). At the time of the investigation this was the only reference available that quantified the gas-phase thermal degradation of VX. A result of the analysis using the Cornell data was a determination that below 259 EF (see Figure 3-1) the decomposition rate of VX was sufficiently low to ensure compliance with the PMCD monitoring plan.

3.1.1 Basis and Assumptions for the Determination of an Effective Monitoring Temperature in the JACADS DAL

1. The purpose of the DAL monitor is to ensure that workers on the cool-down pad are protected in the unlikely event the process fails to completely destroy all agent.
2. To detect potential contamination in the treated waste, the monitoring system must be capable of detecting 75% of the agent vapor concentration generated in the DAL.
3. The gas-phase degradation rate is first-order with an activation energy of 17.2 kcal/mole and a frequency factor of $2.83 \times 10^7 \text{ sec}^{-1}$ as calculated from the Cornell data.

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3.1.2 Initial Calculations for the JACADS DAL

DAL Physical Parameters

The DAL is located at the discharge end of the metal parts furnace and serves to hold the tray and any residual waste until the material cools. As an added safety measure, an ACAMS verifies that workers will not be exposed to agent vapor when the tray is released. The DAL is a rectangular chamber with interlocked doors on each end. After treatment for the specified holding time in the MPF, the Waste Incineration Container (WIC) is moved into the DAL until the exhaust duct can be monitored for at least one full ACAMS cycle.

The dimensions of the DAL and the gas flow rate are shown below.

Calculation of gas residence time in the DAL:

- a. DAL Dimensions: 13.5 feet long by 4 feet wide by 4.5 feet high.
- b. DAL Volume = 243 cubic feet
- c. Air flow through DAL: 517 cubic feet per minute (design rate)
- d. Residence time = 243 cubic feet /517 cubic feet per minute = 0.47 minutes or 28.2 seconds

Calculation of gas residence time in exhaust duct from the DAL to the monitoring probe:

- a. Duct is 6 inches in diameter
- b. Cross-sectional area is 0.196 square feet
- c. Gas velocity = 517 cubic feet per minute / 0.196 square feet = 2638 feet per minute or 44 feet per second
- d. Monitoring location is 30 feet from top of DAL.
- e. Additional transport time to monitoring probe = 30 feet / 44 feet per second = 0.7 seconds

The ACAMS pulls an exhaust duct sample from a stainless steel probe inserted approximately 3 inches into the duct. For VX monitoring, the gas is then passed through a Conversion Pad Assembly (CPA) impregnated with silver fluoride to convert the VX to a more volatile compound (ethyl methylphosphonofluoride or G-analog). Conversion of the VX is necessary for transport through 100 feet of heated (120 EF) Teflon sampling line to the ACAMS instrument located in the MPF vestibule.

It is desired to locate the CPA as close to the probe tip as possible, but the minimum practical distance is limited by the temperature of the exhaust gas. At higher temperatures the CPA degrades quickly, affecting the conversion efficiency and lifetime of the CPA. The CPA was located 18 inches from the probe tip during the DAL operations prior to the 12 August occurrence.

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Calculation of the sample residence time in an ACAMS sampling probe, 18 inches long:

- a. The inside diameter of the probe is 1 cm diameter ID with a cross sectional area of 0.79 cm^2
- b. ACAMS flowrate is 800 mL/min
- c. Length of the probe is 18 inches (45.72 cm)
- d. Gas velocity in the probe is $800 \text{ cm}^3/\text{min}/0.79 \text{ cm}^2 = 1019 \text{ cm}/\text{min}$
- e. Probe Residence time = $45.72 \text{ cm}/1019 \text{ cm}/\text{min} = 0.049 \text{ min} = 2.7 \text{ sec.}$

Therefore, total residence time from the DAL to the CPA = 28.2 seconds + 0.7 seconds + 2.7 seconds = 31.6 seconds (~0.50 min). This assumes no mixing in the DAL i.e. the system acts as a plug flow reactor. This is a conservative worst case assumption.

3.1.3 Thermal Degradation in the DAL

The thermal degradation of chemical agent is assumed to be a first-order reaction that is a function of the temperature and residence time.

The fraction of agent remaining after time t is given by:

$$C/C_0 = e^{(-kt)}$$

Where:

C is the concentration after time t

C_0 is the initial concentration

k is the rate constant (sec^{-1})

t is the time (sec)

The rate constant is calculated from the Arrhenius equation

$$k = Ae^{(-Ea/RT)}$$

Where:

A is the frequency factor (sec^{-1})

Ea is the activation energy (kcal/mole)

R is the universal gas constant ($1.987 \text{ cal deg}^{-1} \text{ mole}^{-1}$)

T is the temperature in degrees Kelvin.

Activation energies and frequency factors are determined experimentally by plotting the $\ln(k)$ versus $1/T$. The slope of the linear plot is Ea/R .

$$\ln k = A + Ea/RT$$

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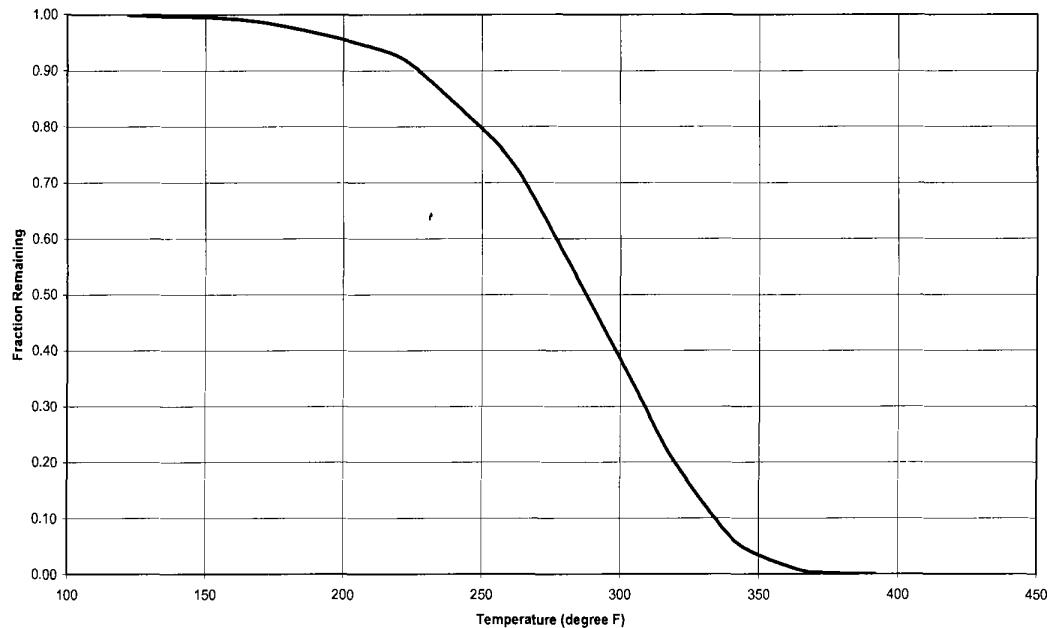


Figure 3-1. Fraction of VX Remaining at the CPA vs. Temperature in the DAL
Fraction of VX remaining at the ACAMS as a function of temperature in the DAL $E_a = 17.2 \text{ kcal/mole}$, $A = 2.83 \times 10^7$ and a residence time of 30 sec. Based on data from the Cornell report

3.1.4 Critical Review of the Cornell Report

There is limited literature on the gas-phase decomposition of VX. The initial on-island investigation team had access only to the report on VX decomposition prepared by Cornell Aeronautical Laboratory in 1962. The experimental approach taken by the Cornell researchers may have been appropriate at that time, but the study has weaknesses in both the experimental approach and the interpretation of the data. The state-of-the-art in high temperature thermal stability studies has undergone extensive change over the last 40 years. This has been driven in part by the United States Environmental Protection Agency's concern over the thermal stability of principal organic hazardous constituents (POHCs) fed to hazardous waste incinerators. For comparison, some POHCs, with their associated activation energies and pre-exponential factors, are shown in Table 1. In addition, modern computational chemistry methods have proven their ability to accurately calculate chemical reaction rates. The investigation team requested that Reaction Engineering International (REI) review the Cornell study to assess the acceptability of the Cornell data for calculating the decomposition kinetic rate of VX.

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REI is under contract to the Army for a Phase II Small Business Innovative Research (SBIR) project to develop component models for the incineration equipment at TOCDF. The goal of that project is to develop computational models using Computational Fluid Dynamics (CFD) and the detailed chemistry and physics of the incineration process.

Table 3-1. Typical Activation Energies and Pre-Exponential Factors for POHCs

Principle Hazardous Organic Constituent	Dellinger Rank	Absolute Rank	Class	Activation Energy (kcal/mole)	Pre-exponential Rate Expression
Chlorobenzene	19	19	1	84.9	3.2E13
Chloroethane	126	126	4	57.7	6.92E13
Hydrazine (Diamine)	127-130	130	4	55.0	7.94E13
Tetrachloromethane	136-140	138	4	55.0	2.16E12
Trichloroethane(1,1,2)	158-161	161	4	47	2.6E11
Dinitrotoluene (2,4)	168-173	170	4	67.3	2.0E15
Hexachloroethane	202-203	203	5	54	5.01E13
Dimethylhydrazine(1,2)	218-220	220	5	49.6	1.66E13
Dichloropropane(2,2)	224	224	5	54.2	7.94E12
Ethyl Methanesulfonate	261-265	262	5	41.1	1.51E12
Tetranitromethane	284	284	6	38.3	2.0E16

The REI team was contracted to perform an in-depth literature review and analysis of chemical agent thermal stability under the conditions anticipated in the DAL. The conclusions of the REI expert team was that the Cornell data is unreliable due to poorly characterized experimental conditions, calculation errors and huge discrepancies between the reported rates and rates of reaction for similar molecules. The REI report is provided in Appendix A. The REI report noted the following concerns:

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1. Poor mixing in the VX inlet tube
2. Failure to obtain steady-state conditions
3. Existence of boundary effects in the reactor
4. Uncertainty in the temperature profile of the reactor
5. Poorly defined residence times due to lack of vapor quenching
6. Errors in data analysis and interpretation.

Additional concerns raised by others with using the Cornell data for this application are:

- The need to extrapolate from the experimental high temperatures in the study (800-1200 °F) and short (1 ms) residence times to the lower temperatures in the DAL (300-600 °F) and longer residence times (30 sec) anticipated in the DAL.
- Errors in calculating the relationship between the kinetic rate constant and temperature will be magnified greatly at the much lower temperatures found in the DAL. Another weakness was the failure to complete an adequate material balance on the VX injected.

3.1.5 Revised Calculations

The REI team reviewed the chemical kinetic mechanisms for organophosphorous compounds and predicted a retro-ene type reaction for VX decomposition. The dominant pathway for VX decomposition is a six-center molecular elimination reaction similar to the findings of Glaude for GB (Glaude 2002). This pathway is illustrated in Figure 3-2.

This type of retro-ene reaction is typical of unimolecular decomposition in molecules this size and is the lowest energy and highest rate unimolecular decomposition path for VX in the gas phase. The result of the REI calculations at the density function level using computational chemistry predicted a minimum Ea of 41.64 kcal/mole for cleaving the carbon – sulfur bond with a predicted frequency factor (A) of 5.36×10^6 over the temperature range 300-2000 K. Complete details of this study can be found in Appendix A of this document.

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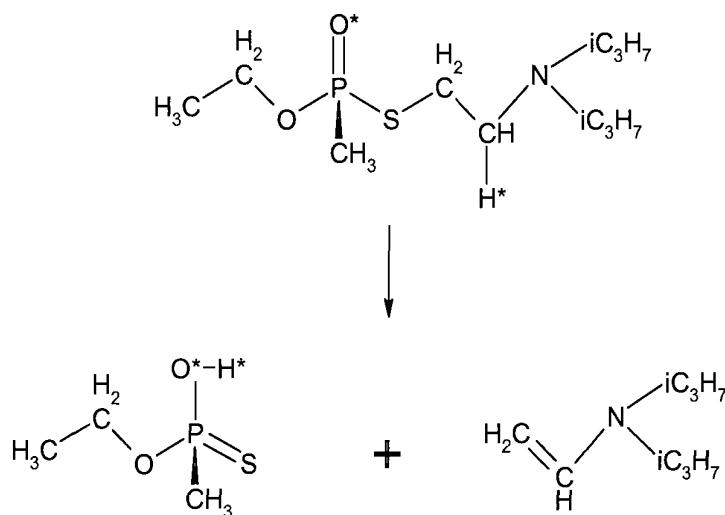


Figure 3-2. Dominant Destruction Pathway for VX.

Using recently developed detailed chemical kinetic mechanisms for GB and HD, and a calculated rate for the first steps of the dominant VX decomposition pathways, REI calculated destruction of the three agents for conditions anticipated to be found in the DAL.

REI recalculated agent destruction (using the same calculations as JACADS) as a function of temperature in a fixed-temperature plug flow reactor with a 30-second residence time. Because agent destruction is dominated by unimolecular decomposition, the results are independent of the initial amount of agent assumed for the calculations.

The results are shown in Figure 3-3. Results are also shown using the parameters given by Lapp & Schneider (1962) for comparison. As shown on Figure 3-3, effective DAL monitoring can be achieved up to about 760 °F for VX, 690 °F for GB and 870 °F for HD. Effective monitoring is defined by the PMCD Quality Assurance (QA) Plan at 75% recovery of the initial concentration. The dotted line in the figure crosses the curves at the temperature where 75% recovery is predicted to take place.

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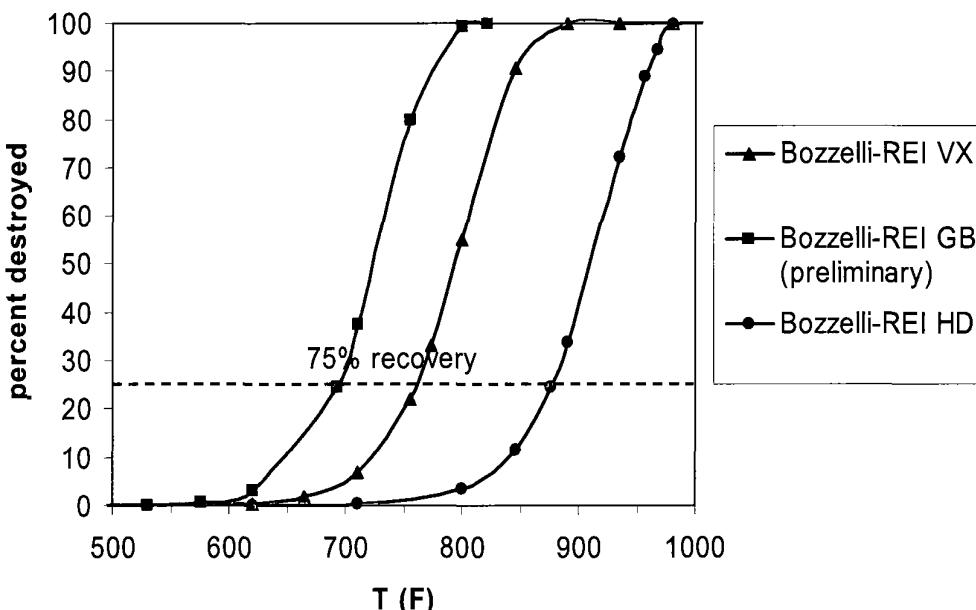


Figure 3-3. Temperature vs. Percent Agent Destroyed for the DAL at JACADS.

3.1.6 University of Dayton Research Institute

During the investigation into the DAL event, another research study was initiated by the Anniston Project. At the request of the Alabama Department of Environmental Management, the ANCDF team contracted the University of Dayton Research Institute (UDRI) to study the thermal stability of the agents GB and VX. Specifically, UDRI was asked to place these compounds on the "Dellinger List" for comparison to the surrogate compounds used during the ANCDF surrogate trial burns. This study was contracted independent of the REI investigation. During review of the draft report by UDRI this study was made available to the authors of this report. An effort was made to jointly evaluate the REI work and the UDRI work with the target being consensus among all investigative teams. UDRI did not possess the computational models that REI had access to, and therefore, identical results were not obtainable. However, the results from UDRI very closely compare to the results obtained by REI. A copy of the UDRI is included here as Appendix G.

3.2 The Heated Discharge Conveyor Bin

The HDC bin is a process discharge point that must be evaluated for effective monitoring. The HDC bin is monitored for the campaign agent prior to bin change-out. At this time, the temperature of the bin enclosure is not known. There are no plants actively processing rockets to allow a determination of the temperature profile in the HDC bin. However, the HDC operates at 1150 °F with airflow in the opposite direction of the bin. Although temperatures in the HDC bin are unknown, experience at JACADS

Section 4.2

DAL Temperature Data for Ton Container Processing Groups

MPF DISCHARGE AIRLOCK COOL DOWN TIME

Tray #	Ton Weight	Tray Type	Date processed	Time to reach 700° F	Cycle Time
L6 Ton Containers					
D-22989	603	L6	21-Sep-07	67 minutes	143 minutes
D-22899	621	L6	21-Sep-07	89 minutes	143 minutes
D-79910	625	L6	28-Sep-07	85 minutes	143 minutes
D-94917	609	L6	10-Oct-07	92 minutes	143 minutes
D-79298	624	L6	10-Oct-07	76 minutes	143 minutes
Avg.	616.4			81.8 minutes	
L4 Ton Containers					
D-38386	476	L4	28-Sep-07	91 minutes	120 minutes
D-16423	359	L4	30-Sep-07	76 minutes	120 minutes
D-8204	323	L4	30-Sep-07	89 minutes	120 minutes
D-651	255	L4	1-Oct-07	85 minutes	120 minutes
D-38651	266	L4	1-Oct-07	85 minutes	120 minutes
Avg.	335.8			85.2 minutes	
L2 Ton Containers					
D-47624	186	L2	29-Jan-07	59 minutes	100 minutes
D-50365	214	L2	29-Jan-07	61 minutes	100 minutes
D-634	169	L2	29-Jan-07	87 minutes	100 minutes
D-14634	219	L2	29-Jan-07	64 minutes	100 minutes
D-1696	153	L2	29-Jan-07	60 minutes	100 minutes
Avg.	188.2			66.2 minutes	

TRAY # D-22989

Event Date	Event Time	14-Tit-9001	14-Tit-9002	14-Tit-9003	14-Tit-9004	14-Tit-9005	14-Tit-9006
09/21/07	4:54:25	807	970	828	903	487	0
09/21/07	4:54:55	945	1100	929	1024	572	0
09/21/07	4:55:25	1035	1165	998	1087	604	0
09/21/07	4:55:55	1085	1191	1044	1112	619	0
09/21/07	4:56:25	1109	1206	1069	1119	624	0
09/21/07	4:56:56	1120	1212	1084	1117	625	0
09/21/07	4:57:26	1128	1211	1091	1117	624	0
09/21/07	4:57:56	1132	1212	1100	1114	624	0
09/21/07	4:58:26	1132	1211	1098	1107	624	0
09/21/07	4:58:56	1138	1223	1103	1139	647	0
09/21/07	4:59:26	1147	1246	1107	1200	691	0
09/21/07	4:59:56	1155	1252	1124	1218	722	0
09/21/07	5:00:26	1164	1253	1127	1218	737	0
09/21/07	5:00:56	1163	1246	1127	1213	737	0
09/21/07	5:01:26	1158	1241	1120	1205	741	0
09/21/07	5:01:56	1152	1229	1108	1196	745	0
09/21/07	5:02:26	1151	1220	1099	1189	741	0
09/21/07	5:02:56	1144	1211	1094	1180	741	0
09/21/07	5:03:26	1144	1199	1088	1174	741	0
09/21/07	5:03:56	1138	1196	1079	1167	738	0
09/21/07	5:04:26	1135	1191	1075	1161	737	0
09/21/07	5:04:56	1134	1191	1077	1158	741	0
09/21/07	5:05:26	1130	1181	1070	1154	739	0
09/21/07	5:05:56	1123	1170	1061	1145	737	0
09/21/07	5:06:26	1117	1159	1052	1136	733	0
09/21/07	5:06:56	1114	1150	1044	1129	732	0
09/21/07	5:07:26	1113	1147	1042	1126	731	0
09/21/07	5:07:56	1109	1142	1034	1119	727	0
09/21/07	5:08:26	1105	1135	1028	1115	728	0
09/21/07	5:08:56	1099	1127	1020	1107	724	0
09/21/07	5:09:26	1097	1123	1014	1103	724	0
09/21/07	5:09:56	1091	1116	1008	1096	724	0
09/21/07	5:10:26	1085	1108	1003	1089	722	0
09/21/07	5:10:56	1083	1103	994	1081	719	0
09/21/07	5:11:26	1077	1094	986	1075	719	0
09/21/07	5:11:57	1074	1085	979	1070	714	0
09/21/07	5:12:27	1072	1078	973	1063	711	0
09/21/07	5:12:57	1067	1068	964	1058	707	0
09/21/07	5:13:27	1062	1062	960	1052	706	0
09/21/07	5:13:57	1055	1055	950	1043	702	0
09/21/07	5:14:27	1051	1044	944	1037	703	0
09/21/07	5:14:57	1047	1038	937	1031	698	0
09/21/07	5:15:27	1042	1031	932	1026	695	0
09/21/07	5:15:57	1038	1026	927	1020	695	0
09/21/07	5:16:27	1033	1017	921	1014	692	0
09/21/07	5:16:57	1026	1005	913	1008	689	0
09/21/07	5:17:27	1023	1000	906	1004	683	0
09/21/07	5:17:57	1017	997	900	996	680	0
09/21/07	5:18:27	1015	989	895	996	682	0

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Event Date	Event Time	14-Tit-9001	14-Tit-9002	14-Tit-9003	14-Tit-9004	14-Tit-9005	14-Tit-9006
09/21/07	5:18:57	1012	984	891	987	678	0
09/21/07	5:19:27	1005	978	885	984	676	0
09/21/07	5:19:57	1003	967	880	979	677	0
09/21/07	5:20:27	1000	961	872	972	670	0
09/21/07	5:20:57	991	952	865	963	665	0
09/21/07	5:21:27	988	948	858	957	665	0
09/21/07	5:21:57	983	941	853	953	662	0
09/21/07	5:22:28	979	934	847	947	660	0
09/21/07	5:22:58	977	927	843	941	657	0
09/21/07	5:23:28	971	921	836	936	653	0
09/21/07	5:23:58	965	918	833	929	653	0
09/21/07	5:24:28	959	912	827	923	649	0
09/21/07	5:24:58	959	906	824	918	647	0
09/21/07	5:25:28	955	899	818	915	645	0
09/21/07	5:25:58	951	893	814	912	644	0
09/21/07	5:26:28	948	890	807	907	642	0
09/21/07	5:26:58	941	883	801	901	641	0
09/21/07	5:27:28	937	880	797	894	639	0
09/21/07	5:27:58	933	874	792	891	636	0
09/21/07	5:28:28	929	867	786	886	636	0
09/21/07	5:28:58	924	859	782	884	630	0
09/21/07	5:29:28	924	853	777	876	628	0
09/21/07	5:29:58	918	849	774	871	627	0
09/21/07	5:30:28	914	842	772	864	623	0
09/21/07	5:30:58	911	836	765	862	619	0
09/21/07	5:31:28	905	834	760	859	618	0
09/21/07	5:31:58	900	827	757	853	614	0
09/21/07	5:32:28	897	826	750	849	610	0
09/21/07	5:32:58	894	818	746	844	612	0
09/21/07	5:33:28	892	813	745	841	609	0
09/21/07	5:33:58	886	808	736	836	606	0
09/21/07	5:34:28	882	804	733	830	605	0
09/21/07	5:34:58	880	800	731	827	605	0
09/21/07	5:35:29	876	793	723	824	601	0
09/21/07	5:35:59	871	789	719	821	598	0
09/21/07	5:36:29	870	784	715	812	596	0
09/21/07	5:36:59	866	780	712	812	592	0
09/21/07	5:37:29	862	774	707	806	591	0
09/21/07	5:37:59	858	771	704	801	590	0
09/21/07	5:38:30	851	767	700	801	587	0
09/21/07	5:39:00	851	760	695	793	583	0
09/21/07	5:39:30	847	757	694	789	580	0
09/21/07	5:40:00	844	754	690	786	578	0
09/21/07	5:40:30	839	749	684	778	574	0
09/21/07	5:41:00	837	745	680	774	573	0
09/21/07	5:41:30	830	739	675	772	569	0
09/21/07	5:42:00	829	734	672	765	566	0
09/21/07	5:42:30	824	729	668	762	566	0
09/21/07	5:43:00	823	726	664	761	565	0

TRAY # D-22989

Event Date	Event Time	14-Tit-9001	14-Tit-9002	14-Tit-9003	14-Tit-9004	14-Tit-9005	14-Tit-9006
09/21/07	5:43:30	820	722	662	756	562	0
09/21/07	5:44:00	812	719	657	754	562	0
09/21/07	5:44:30	812	713	654	749	562	0
09/21/07	5:45:00	807	709	650	743	557	0
09/21/07	5:45:30	804	706	648	739	553	0
09/21/07	5:46:00	801	700	641	736	550	0
09/21/07	5:46:30	797	695	639	733	547	0
09/21/07	5:47:00	794	692	635	730	549	0
09/21/07	5:47:30	791	690	631	729	547	0
09/21/07	5:48:00	785	686	628	723	543	0
09/21/07	5:48:30	784	684	624	723	542	0
09/21/07	5:49:00	782	681	622	718	540	0
09/21/07	5:49:30	779	675	619	712	542	0
09/21/07	5:50:00	778	668	615	708	535	0
09/21/07	5:50:30	773	665	611	705	532	0
09/21/07	5:51:00	771	662	607	703	533	0
09/21/07	5:51:30	765	657	603	699	532	0
09/21/07	5:52:00	762	653	600	696	530	0
09/21/07	5:52:30	759	651	597	692	528	0
09/21/07	5:53:00	754	647	594	691	525	0
09/21/07	5:53:30	750	645	592	686	523	0
09/21/07	5:54:00	747	643	590	685	524	0
09/21/07	5:54:30	744	638	587	682	519	0
09/21/07	5:55:00	741	634	584	679	516	0
09/21/07	5:55:30	738	629	580	672	514	0
09/21/07	5:56:00	738	627	576	669	512	0
09/21/07	5:56:30	732	626	574	666	511	0
09/21/07	5:57:00	730	622	572	663	511	0
09/21/07	5:57:30	726	619	569	657	509	0
09/21/07	5:58:00	725	614	565	652	503	0
09/21/07	5:58:30	722	608	562	649	500	0
09/21/07	5:59:00	718	605	558	647	499	0
09/21/07	5:59:30	715	603	556	642	497	0
09/21/07	6:00:00	713	600	553	639	496	0
09/21/07	6:00:30	709	596	550	637	495	0
09/21/07	6:01:00	704	595	549	638	493	0
09/21/07	6:01:30	701	591	546	634	490	0
09/21/07	6:02:00	698	587	543	628	488	0
09/21/07	6:02:30	695	584	541	626	484	0
09/21/07	6:03:00	692	580	538	622	483	0
09/21/07	6:03:30	689	578	535	618	484	0
09/21/07	6:04:00	686	576	532	616	482	0
09/21/07	6:04:30	682	574	528	613	478	0
09/21/07	6:05:00	679	569	526	610	476	0
09/21/07	6:05:30	676	566	522	609	474	0
09/21/07	6:06:00	671	564	520	606	474	0
09/21/07	6:06:30	670	560	517	605	474	0
09/21/07	6:07:00	666	557	515	601	473	0
09/21/07	6:07:30	663	553	512	598	468	0

TRAY # D-22989

Event Date	Event Time	14-Tit-9001	14-Tit-9002	14-Tit-9003	14-Tit-9004	14-Tit-9005	14-Tit-9006
09/21/07	6:08:00	660	548	510	596	467	0
09/21/07	6:08:30	658	546	507	594	467	0
09/21/07	6:09:00	653	544	505	594	468	0
09/21/07	6:09:30	651	540	503	590	466	0
09/21/07	6:10:00	649	537	499	586	461	0
09/21/07	6:10:30	646	534	497	583	458	0
09/21/07	6:11:00	643	531	493	582	457	0
09/21/07	6:11:30	639	528	491	579	455	0
09/21/07	6:12:00	637	526	490	577	454	0
09/21/07	6:12:30	634	523	488	573	455	0
09/21/07	6:13:00	630	521	486	571	451	0
09/21/07	6:13:30	628	519	483	567	451	0
09/21/07	6:14:00	625	516	480	565	448	0
09/21/07	6:14:30	620	515	479	562	448	0
09/21/07	6:15:00	620	511	475	558	445	0
09/21/07	6:15:30	617	507	473	555	444	0
09/21/07	6:16:00	615	505	470	551	441	0
09/21/07	6:16:30	612	502	468	549	438	0
09/21/07	6:17:00	608	499	466	547	437	0
09/21/07	6:17:30	605	498	464	544	437	0
09/21/07	6:18:00	603	495	461	543	436	0
09/21/07	6:18:30	600	493	459	539	436	0
09/21/07	6:19:00	598	492	458	535	431	0

Time to 600 °F 1:24 (84 Min)
Time to 700 °F 1:07 (67 Min)

**Cycle Time
143 Minutes**

TRAY # D-22899

Event Date	Event Time	14-Tit-9001	14-Tit-9002	14-Tit-9003	14-Tit-9004	14-Tit-9005	14-Tit-9006
09/21/07	7:28:07	505	619	585	553	180	0
09/21/07	7:28:37	729	886	756	806	418	0
09/21/07	7:29:07	900	1054	875	965	547	0
09/21/07	7:29:37	1001	1136	953	1044	595	0
09/21/07	7:30:07	1067	1179	1006	1086	607	0
09/21/07	7:30:37	1101	1198	1039	1101	619	0
09/21/07	7:31:07	1117	1207	1057	1105	625	0
09/21/07	7:31:37	1130	1211	1070	1105	625	0
09/21/07	7:32:07	1133	1209	1078	1101	625	0
09/21/07	7:32:37	1133	1213	1083	1097	627	0
09/21/07	7:33:07	1133	1210	1083	1094	624	0
09/21/07	7:33:37	1154	1233	1086	1138	681	0
09/21/07	7:34:07	1171	1241	1041	1152	733	0
09/21/07	7:34:37	1183	1252	1019	1159	755	0
09/21/07	7:35:07	1192	1263	1013	1163	765	0
09/21/07	7:35:37	1201	1274	1011	1167	770	0
09/21/07	7:36:07	1207	1275	1028	1164	776	0
09/21/07	7:36:37	1207	1268	1028	1163	778	0
09/21/07	7:37:07	1207	1260	1030	1165	779	0
09/21/07	7:37:37	1207	1254	1020	1166	782	0
09/21/07	7:38:07	1204	1248	1016	1162	782	0
09/21/07	7:38:37	1204	1241	1010	1161	783	0
09/21/07	7:39:07	1201	1235	1006	1157	783	0
09/21/07	7:39:37	1198	1230	1005	1154	784	0
09/21/07	7:40:08	1194	1225	1003	1152	784	0
09/21/07	7:40:38	1195	1219	1001	1148	783	0
09/21/07	7:41:08	1192	1217	1001	1143	783	0
09/21/07	7:41:38	1189	1213	1004	1142	784	0
09/21/07	7:42:08	1187	1211	1004	1137	783	0
09/21/07	7:42:38	1187	1210	1001	1130	781	0
09/21/07	7:43:08	1183	1207	995	1130	779	0
09/21/07	7:43:38	1182	1207	1001	1127	780	0
09/21/07	7:44:08	1180	1204	1003	1119	780	0
09/21/07	7:44:38	1175	1201	1002	1112	779	0
09/21/07	7:45:08	1174	1198	1004	1109	776	0
09/21/07	7:45:38	1169	1191	995	1107	777	0
09/21/07	7:46:08	1166	1180	990	1107	775	0
09/21/07	7:46:38	1166	1174	988	1101	772	0
09/21/07	7:47:08	1159	1173	984	1092	772	0
09/21/07	7:47:38	1156	1162	974	1088	772	0
09/21/07	7:48:08	1153	1154	966	1089	769	0
09/21/07	7:48:38	1148	1146	963	1090	767	0
09/21/07	7:49:08	1145	1141	960	1089	767	0
09/21/07	7:49:38	1142	1135	957	1089	770	0
09/21/07	7:50:08	1139	1130	951	1085	769	0
09/21/07	7:50:38	1135	1123	948	1083	767	0
09/21/07	7:51:08	1133	1117	943	1079	766	0
09/21/07	7:51:38	1130	1112	938	1074	763	0
09/21/07	7:52:08	1125	1106	933	1072	762	0

TRAY # D-22899

Event Date	Event Time	14-Tit-9001	14-Tit-9002	14-Tit-9003	14-Tit-9004	14-Tit-9005	14-Tit-9006
09/21/07	7:52:38	1121	1100	930	1064	762	0
09/21/07	7:53:08	1119	1095	925	1059	762	0
09/21/07	7:53:38	1116	1088	919	1055	761	0
09/21/07	7:54:08	1112	1083	911	1048	757	0
09/21/07	7:54:38	1110	1076	910	1043	754	0
09/21/07	7:55:08	1107	1071	907	1041	752	0
09/21/07	7:55:38	1101	1066	901	1035	751	0
09/21/07	7:56:08	1098	1063	897	1030	749	0
09/21/07	7:56:38	1095	1055	894	1029	748	0
09/21/07	7:57:08	1092	1051	888	1024	748	0
09/21/07	7:57:38	1089	1045	884	1019	746	0
09/21/07	7:58:08	1085	1038	881	1018	745	0
09/21/07	7:58:38	1079	1033	872	1012	742	0
09/21/07	7:59:08	1076	1027	869	1007	739	0
09/21/07	7:59:38	1074	1020	865	1004	737	0
09/21/07	8:00:08	1072	1017	863	1001	735	0
09/21/07	8:00:38	1066	1010	859	998	734	0
09/21/07	8:01:08	1065	1006	853	990	731	0
09/21/07	8:01:38	1059	1002	850	988	732	0
09/21/07	8:02:08	1053	995	847	982	729	0
09/21/07	8:02:38	1053	991	841	975	727	0
09/21/07	8:03:08	1047	985	836	970	725	0
09/21/07	8:03:38	1044	978	833	961	722	0
09/21/07	8:04:08	1040	974	829	952	718	0
09/21/07	8:04:38	1035	971	825	949	717	0
09/21/07	8:05:08	1032	966	821	941	712	0
09/21/07	8:05:38	1027	959	814	938	712	0
09/21/07	8:06:08	1023	951	812	936	709	0
09/21/07	8:06:39	1021	951	807	926	706	0
09/21/07	8:07:09	1014	946	803	921	705	0
09/21/07	8:07:39	1010	941	797	917	700	0
09/21/07	8:08:09	1009	935	793	914	697	0
09/21/07	8:08:39	1004	926	788	910	696	0
09/21/07	8:09:09	998	922	779	906	695	0
09/21/07	8:09:39	995	913	777	899	692	0
09/21/07	8:10:09	991	909	772	896	689	0
09/21/07	8:10:39	988	901	768	894	687	0
09/21/07	8:11:09	982	896	763	891	684	0
09/21/07	8:11:39	979	891	759	883	683	0
09/21/07	8:12:09	973	885	753	880	680	0
09/21/07	8:12:39	973	882	749	876	678	0
09/21/07	8:13:09	969	880	741	870	677	0
09/21/07	8:13:39	964	872	737	861	673	0
09/21/07	8:14:09	960	866	736	861	669	0
09/21/07	8:14:39	959	862	732	860	670	0
09/21/07	8:15:09	954	857	728	855	669	0
09/21/07	8:15:39	952	853	725	851	667	0
09/21/07	8:16:09	948	851	719	844	663	0
09/21/07	8:16:39	945	843	713	841	661	0

TRAY # D-22899

Event Date	Event Time	14-Tit-9001	14-Tit-9002	14-Tit-9003	14-Tit-9004	14-Tit-9005	14-Tit-9006
09/21/07	8:17:09	942	830	701	835	665	0
09/21/07	8:17:39	937	822	693	827	665	0
09/21/07	8:18:09	936	814	686	824	661	0
09/21/07	8:18:39	933	808	681	818	659	0
09/21/07	8:19:09	930	806	676	812	655	0
09/21/07	8:19:39	925	803	673	812	654	0
09/21/07	8:20:09	923	798	668	805	652	0
09/21/07	8:20:39	920	789	664	800	650	0
09/21/07	8:21:09	915	789	660	796	648	0
09/21/07	8:21:39	913	783	658	792	646	0
09/21/07	8:22:09	907	783	654	789	643	0
09/21/07	8:22:39	905	776	652	786	641	0
09/21/07	8:23:09	901	771	648	782	641	0
09/21/07	8:23:39	900	767	643	777	637	0
09/21/07	8:24:09	898	766	641	774	637	0
09/21/07	8:24:39	893	761	636	770	634	0
09/21/07	8:25:09	891	757	634	765	631	0
09/21/07	8:25:39	886	754	630	762	631	0
09/21/07	8:26:09	883	751	626	759	628	0
09/21/07	8:26:39	880	749	623	753	624	0
09/21/07	8:27:09	878	740	619	754	626	0
09/21/07	8:27:39	874	736	614	748	621	0
09/21/07	8:28:09	870	732	609	743	619	0
09/21/07	8:28:39	864	729	606	738	617	0
09/21/07	8:29:09	863	722	604	733	617	0
09/21/07	8:29:39	858	718	599	728	614	0
09/21/07	8:30:09	855	715	597	724	611	0
09/21/07	8:30:39	851	711	593	719	609	0
09/21/07	8:31:09	849	708	591	714	604	0
09/21/07	8:31:39	845	706	586	711	604	0
09/21/07	8:32:09	842	700	585	708	601	0
09/21/07	8:32:39	841	699	581	708	599	0
09/21/07	8:33:09	837	694	577	705	597	0
09/21/07	8:33:39	834	693	576	698	596	0
09/21/07	8:34:09	829	689	573	696	594	0
09/21/07	8:34:39	826	685	569	691	593	0
09/21/07	8:35:09	824	682	564	688	591	0
09/21/07	8:35:39	817	678	561	684	589	0
09/21/07	8:36:09	816	675	559	680	587	0
09/21/07	8:36:39	814	672	556	678	584	0
09/21/07	8:37:09	808	670	554	676	581	0
09/21/07	8:37:39	806	666	551	671	583	0
09/21/07	8:38:10	806	662	545	669	580	0
09/21/07	8:38:40	800	659	545	665	580	0
09/21/07	8:39:10	799	655	541	661	578	0
09/21/07	8:39:40	795	650	538	659	575	0
09/21/07	8:40:10	791	647	534	657	575	0
09/21/07	8:40:40	788	643	531	652	572	0
09/21/07	8:41:10	788	642	529	650	570	0

TRAY # D-22899

Event Date	Event Time	14-Tit-9001	14-Tit-9002	14-Tit-9003	14-Tit-9004	14-Tit-9005	14-Tit-9006
09/21/07	8:41:40	784	639	525	648	569	0
09/21/07	8:42:10	777	635	522	644	566	0
09/21/07	8:42:40	777	630	518	641	564	0
09/21/07	8:43:10	775	628	517	639	562	0
09/21/07	8:43:40	771	628	516	637	561	0
09/21/07	8:44:10	770	625	513	634	557	0
09/21/07	8:44:40	767	620	511	630	557	0
09/21/07	8:45:10	763	617	509	628	555	0
09/21/07	8:45:40	759	616	507	627	553	0
09/21/07	8:46:11	759	613	504	626	552	0
09/21/07	8:46:41	755	609	502	622	551	0
09/21/07	8:47:11	753	608	499	617	547	0
09/21/07	8:47:41	748	604	496	615	546	0
09/21/07	8:48:11	745	599	492	614	546	0
09/21/07	8:48:41	744	597	491	612	545	0
09/21/07	8:49:11	742	594	489	604	540	0
09/21/07	8:49:41	737	590	483	600	538	0
09/21/07	8:50:11	734	589	480	596	537	0
09/21/07	8:50:41	733	585	477	593	536	0
09/21/07	8:51:11	730	581	474	591	533	0
09/21/07	8:51:41	726	579	473	588	529	0
09/21/07	8:52:11	723	579	471	586	528	0
09/21/07	8:52:41	720	576	469	585	528	0
09/21/07	8:53:11	718	575	466	581	526	0
09/21/07	8:53:41	717	573	466	579	524	0
09/21/07	8:54:11	712	571	465	579	524	0
09/21/07	8:54:41	710	568	464	575	521	0
09/21/07	8:55:11	706	565	461	571	521	0
09/21/07	8:55:41	703	562	458	569	518	0
09/21/07	8:56:11	701	559	456	567	516	0
09/21/07	8:56:41	700	557	453	564	515	0
09/21/07	8:57:11	697	555	454	561	513	0
09/21/07	8:57:41	694	552	450	560	512	0
09/21/07	8:58:11	692	552	448	558	510	0
09/21/07	8:58:41	691	549	446	557	509	0
09/21/07	8:59:11	684	544	443	550	507	0
09/21/07	8:59:41	683	542	440	550	505	0
09/21/07	9:00:11	680	539	438	545	505	0
09/21/07	9:00:41	677	536	436	539	501	0
09/21/07	9:01:11	675	535	434	535	499	0
09/21/07	9:01:41	672	531	431	532	498	0
09/21/07	9:02:11	669	530	429	531	496	0
09/21/07	9:02:41	667	528	428	529	496	0
09/21/07	9:03:11	666	525	423	527	495	0
09/21/07	9:03:41	662	520	419	524	494	0
09/21/07	9:04:11	659	517	414	521	491	0
09/21/07	9:04:41	657	514	412	516	489	0
09/21/07	9:05:11	654	512	411	516	487	0
09/21/07	9:05:41	652	508	407	512	486	0

TRAY # D-22899

Event Date	Event Time	14-Tit-9001	14-Tit-9002	14-Tit-9003	14-Tit-9004	14-Tit-9005	14-Tit-9006
09/21/07	9:06:11	647	506	407	510	484	0
09/21/07	9:06:41	645	502	404	510	484	0
09/21/07	9:07:12	644	502	401	507	482	0
09/21/07	9:07:42	641	500	401	504	480	0
09/21/07	9:08:12	639	499	399	501	480	0
09/21/07	9:08:42	636	497	399	498	477	0
09/21/07	9:09:12	635	496	398	495	475	0
09/21/07	9:09:42	632	493	396	496	475	0
09/21/07	9:10:12	629	492	395	493	474	0
09/21/07	9:10:42	628	490	392	492	472	0
09/21/07	9:11:12	626	488	390	491	470	0
09/21/07	9:11:42	623	488	389	489	469	0
09/21/07	9:12:12	621	486	388	487	466	0
09/21/07	9:12:42	619	483	384	486	467	0
09/21/07	9:13:12	617	482	385	482	465	0
09/21/07	9:13:42	615	483	384	480	465	0
09/21/07	9:14:12	612	481	383	478	463	0
09/21/07	9:14:42	610	479	381	478	462	0
09/21/07	9:15:12	607	475	379	476	461	0
09/21/07	9:15:42	607	475	377	474	460	0
09/21/07	9:16:12	604	473	374	474	459	0
09/21/07	9:16:42	602	468	372	471	458	0
09/21/07	9:17:12	600	467	370	469	455	0
09/21/07	9:17:42	597	465	369	464	452	0

Time to 600 °F 1:49 (109 Min)
Time to 700 °F 1:29 (89 Min)

**Cycle Time
143 Minutes**

TRAY # D-79910

Event Date	Event Time	14-Tit-9001	14-Tit-9002	14-Tit-9003	14-Tit-9004	14-Tit-9005	14-Tit-9006
09/28/07	3:33:16	207	292	340	233	101	0
09/28/07	3:33:46	460	600	570	552	139	0
09/28/07	3:34:16	671	856	734	788	362	0
09/28/07	3:34:46	825	1001	839	915	465	0
09/28/07	3:35:17	930	1078	910	980	522	0
09/28/07	3:35:47	998	1118	956	1006	544	0
09/28/07	3:36:17	1033	1139	984	1018	555	0
09/28/07	3:36:47	1051	1146	1005	1024	559	0
09/28/07	3:37:17	1062	1148	1019	1024	558	0
09/28/07	3:37:47	1066	1151	1022	1022	559	0
09/28/07	3:38:17	1065	1149	1024	1018	564	0
09/28/07	3:38:47	1064	1152	1021	1024	564	0
09/28/07	3:39:17	1061	1182	994	1030	592	0
09/28/07	3:39:47	1056	1183	936	1018	631	0
09/28/07	3:40:17	1050	1178	889	1014	654	0
09/28/07	3:40:47	1046	1178	860	1007	661	0
09/28/07	3:41:17	1045	1172	831	996	664	0
09/28/07	3:41:47	1040	1166	814	987	663	0
09/28/07	3:42:17	1037	1166	802	979	663	0
09/28/07	3:42:47	1034	1161	785	972	663	0
09/28/07	3:43:17	1028	1155	770	966	660	0
09/28/07	3:43:47	1028	1149	766	957	655	0
09/28/07	3:44:17	1030	1143	762	954	655	0
09/28/07	3:44:47	1028	1142	754	950	654	0
09/28/07	3:45:17	1029	1136	747	946	654	0
09/28/07	3:45:47	1027	1131	742	943	656	0
09/28/07	3:46:17	1025	1126	734	931	660	0
09/28/07	3:46:47	1022	1122	728	928	661	0
09/28/07	3:47:17	1021	1116	720	919	659	0
09/28/07	3:47:47	1019	1113	710	911	656	0
09/28/07	3:48:17	1019	1112	710	907	656	0
09/28/07	3:48:47	1020	1108	703	906	656	0
09/28/07	3:49:17	1017	1103	702	902	655	0
09/28/07	3:49:47	1014	1099	702	896	652	0
09/28/07	3:50:17	1010	1096	694	893	655	0
09/28/07	3:50:47	1006	1093	691	890	651	0
09/28/07	3:51:17	1006	1090	686	884	649	0
09/28/07	3:51:47	1002	1087	682	878	648	0
09/28/07	3:52:17	1003	1084	678	875	646	0
09/28/07	3:52:47	999	1078	673	869	646	0
09/28/07	3:53:17	996	1074	670	864	643	0
09/28/07	3:53:47	995	1072	667	856	639	0
09/28/07	3:54:17	991	1069	661	853	636	0
09/28/07	3:54:47	986	1063	657	848	634	0
09/28/07	3:55:17	988	1061	654	843	633	0
09/28/07	3:55:47	984	1057	654	842	631	0
09/28/07	3:56:17	984	1054	651	839	629	0
09/28/07	3:56:47	981	1051	650	832	624	0
09/28/07	3:57:17	976	1047	649	829	625	0

TRAY # D-79910

Event Date	Event Time	14-Tit-9001	14-Tit-9002	14-Tit-9003	14-Tit-9004	14-Tit-9005	14-Tit-9006
09/28/07	3:57:47	972	1042	645	825	624	0
09/28/07	3:58:17	972	1039	639	819	621	0
09/28/07	3:58:47	969	1035	637	812	618	0
09/28/07	3:59:17	966	1032	630	810	618	0
09/28/07	3:59:47	966	1028	625	807	617	0
09/28/07	4:00:17	961	1025	623	804	614	0
09/28/07	4:00:47	958	1022	620	801	611	0
09/28/07	4:01:17	959	1022	624	798	613	0
09/28/07	4:01:47	957	1016	617	795	611	0
09/28/07	4:02:17	954	1013	613	792	610	0
09/28/07	4:02:47	953	1013	611	789	608	0
09/28/07	4:03:17	948	1007	607	784	605	0
09/28/07	4:03:47	946	1004	600	780	604	0
09/28/07	4:04:17	943	1001	599	777	602	0
09/28/07	4:04:47	939	1001	594	773	600	0
09/28/07	4:05:17	937	995	591	765	600	0
09/28/07	4:05:47	933	994	590	765	595	0
09/28/07	4:06:17	933	989	588	764	595	0
09/28/07	4:06:47	930	982	588	760	592	0
09/28/07	4:07:17	924	976	589	757	591	0
09/28/07	4:07:47	923	978	590	753	594	0
09/28/07	4:08:17	924	975	590	751	588	0
09/28/07	4:08:47	919	970	590	750	587	0
09/28/07	4:09:17	916	971	588	747	585	0
09/28/07	4:09:47	912	967	583	743	585	0
09/28/07	4:10:17	910	962	576	738	583	0
09/28/07	4:10:47	906	959	572	734	581	0
09/28/07	4:11:17	906	956	567	730	579	0
09/28/07	4:11:47	900	953	569	726	578	0
09/28/07	4:12:17	901	947	565	726	578	0
09/28/07	4:12:47	900	946	562	723	578	0
09/28/07	4:13:17	895	941	561	722	577	0
09/28/07	4:13:47	894	942	561	717	575	0
09/28/07	4:14:17	890	937	560	716	572	0
09/28/07	4:14:47	885	934	556	712	570	0
09/28/07	4:15:17	886	930	554	708	568	0
09/28/07	4:15:47	886	925	553	705	567	0
09/28/07	4:16:17	883	925	548	706	565	0
09/28/07	4:16:47	877	920	542	700	563	0
09/28/07	4:17:17	873	917	537	698	562	0
09/28/07	4:17:47	873	913	534	694	559	0
09/28/07	4:18:17	871	910	531	692	557	0
09/28/07	4:18:47	868	906	533	689	556	0
09/28/07	4:19:17	867	905	534	688	555	0
09/28/07	4:19:47	865	903	533	682	553	0
09/28/07	4:20:18	863	902	536	681	551	0
09/28/07	4:20:48	860	901	535	679	549	0
09/28/07	4:21:18	859	896	534	677	549	0
09/28/07	4:21:48	857	893	531	675	547	0

TRAY # D-79910

Event Date	Event Time	14-Tit-9001	14-Tit-9002	14-Tit-9003	14-Tit-9004	14-Tit-9005	14-Tit-9006
09/28/07	4:22:18	855	891	533	673	546	0
09/28/07	4:22:48	855	889	531	670	543	0
09/28/07	4:23:18	852	884	528	668	542	0
09/28/07	4:23:48	849	884	525	665	542	0
09/28/07	4:24:18	847	880	522	663	542	0
09/28/07	4:24:48	844	878	517	660	542	0
09/28/07	4:25:19	842	871	510	657	541	0
09/28/07	4:25:49	839	870	505	654	540	0
09/28/07	4:26:19	837	869	506	652	540	0
09/28/07	4:26:49	834	872	502	651	539	0
09/28/07	4:27:19	833	872	500	650	537	0
09/28/07	4:27:49	832	866	495	648	533	0
09/28/07	4:28:19	832	867	491	645	532	0
09/28/07	4:28:49	831	860	490	643	530	0
09/28/07	4:29:19	831	858	490	641	529	0
09/28/07	4:29:49	828	857	488	638	527	0
09/28/07	4:30:19	822	852	491	637	525	0
09/28/07	4:30:49	823	853	492	636	526	0
09/28/07	4:31:19	819	846	489	634	525	0
09/28/07	4:31:49	819	843	483	629	523	0
09/28/07	4:32:19	816	839	480	624	519	0
09/28/07	4:32:49	814	834	479	622	517	0
09/28/07	4:33:19	813	834	478	622	515	0
09/28/07	4:33:49	810	829	478	618	513	0
09/28/07	4:34:19	810	825	472	615	510	0
09/28/07	4:34:49	804	822	471	610	509	0
09/28/07	4:35:19	802	819	467	609	505	0
09/28/07	4:35:49	802	816	467	607	505	0
09/28/07	4:36:19	800	816	463	604	503	0
09/28/07	4:36:49	795	815	463	602	502	0
09/28/07	4:37:19	793	813	462	600	501	0
09/28/07	4:37:49	793	804	461	597	499	0
09/28/07	4:38:19	790	798	455	595	498	0
09/28/07	4:38:49	787	794	453	593	498	0
09/28/07	4:39:19	784	792	450	591	495	0
09/28/07	4:39:49	782	788	449	589	494	0
09/28/07	4:40:19	781	786	447	587	492	0
09/28/07	4:40:49	775	785	444	585	491	0
09/28/07	4:41:19	772	781	446	582	489	0
09/28/07	4:41:49	773	778	446	581	489	0
09/28/07	4:42:19	772	775	446	579	488	0
09/28/07	4:42:49	769	772	443	577	487	0
09/28/07	4:43:19	766	769	441	575	486	0
09/28/07	4:43:49	766	768	438	571	483	0
09/28/07	4:44:19	760	765	436	570	481	0
09/28/07	4:44:49	760	760	432	568	481	0
09/28/07	4:45:19	759	762	429	564	480	0
09/28/07	4:45:49	756	754	427	564	478	0
09/28/07	4:46:19	752	756	424	561	478	0

TRAY # D-79910

Event Date	Event Time	14-Tit-9001	14-Tit-9002	14-Tit-9003	14-Tit-9004	14-Tit-9005	14-Tit-9006
09/28/07	4:46:49	748	752	423	560	476	0
09/28/07	4:47:19	748	747	420	557	473	0
09/28/07	4:47:49	744	746	417	556	473	0
09/28/07	4:48:19	743	744	415	553	472	0
09/28/07	4:48:49	739	740	410	549	472	0
09/28/07	4:49:19	736	737	409	548	470	0
09/28/07	4:49:49	735	735	408	547	470	0
09/28/07	4:50:19	732	732	408	544	469	0
09/28/07	4:50:49	729	729	407	542	467	0
09/28/07	4:51:19	729	728	403	539	467	0
09/28/07	4:51:49	724	724	402	536	465	0
09/28/07	4:52:19	724	724	398	534	462	0
09/28/07	4:52:49	720	717	396	532	462	0
09/28/07	4:53:19	719	716	395	530	461	0
09/28/07	4:53:49	718	715	395	528	459	0
09/28/07	4:54:19	717	712	394	526	457	0
09/28/07	4:54:49	713	709	394	525	456	0
09/28/07	4:55:19	712	709	390	522	454	0
09/28/07	4:55:49	709	706	387	520	454	0
09/28/07	4:56:19	706	700	388	518	451	0
09/28/07	4:56:49	705	702	386	515	449	0
09/28/07	4:57:19	703	697	384	514	448	0
09/28/07	4:57:49	701	699	384	513	447	0
09/28/07	4:58:19	700	694	383	512	445	0
09/28/07	4:58:49	697	691	381	509	444	0
09/28/07	4:59:19	696	688	378	507	442	0
09/28/07	4:59:49	693	689	377	505	442	0
09/28/07	5:00:19	688	684	372	502	436	0
09/28/07	5:00:49	687	684	369	497	435	0
09/28/07	5:01:19	684	676	366	494	435	0
09/28/07	5:01:49	685	674	367	491	436	0
09/28/07	5:02:19	682	671	364	487	436	0
09/28/07	5:02:49	677	669	362	485	435	0
09/28/07	5:03:19	675	665	359	483	433	0
09/28/07	5:03:49	671	663	356	481	432	0
09/28/07	5:04:19	669	660	354	478	431	0
09/28/07	5:04:49	668	657	353	475	430	0
09/28/07	5:05:19	665	656	350	474	430	0
09/28/07	5:05:49	663	653	349	473	427	0
09/28/07	5:06:19	661	651	348	471	429	0
09/28/07	5:06:49	661	650	346	469	426	0
09/28/07	5:07:19	659	647	344	467	426	0
09/28/07	5:07:49	657	647	344	467	423	0
09/28/07	5:08:19	655	645	343	466	425	0
09/28/07	5:08:49	654	643	342	463	423	0
09/28/07	5:09:19	651	640	340	461	421	0
09/28/07	5:09:49	650	639	339	459	422	0
09/28/07	5:10:19	649	638	338	460	419	0
09/28/07	5:10:49	647	636	336	460	417	0

TRAY # D-79910

Event Date	Event Time	14-Tit-9001	14-Tit-9002	14-Tit-9003	14-Tit-9004	14-Tit-9005	14-Tit-9006
09/28/07	5:11:19	646	636	342	461	418	0
09/28/07	5:11:49	646	633	340	460	415	0
09/28/07	5:12:19	643	631	338	459	414	0
09/28/07	5:12:49	641	629	336	456	414	0
09/28/07	5:13:19	641	627	336	454	411	0
09/28/07	5:13:49	640	627	335	455	409	0
09/28/07	5:14:19	638	624	336	455	409	0
09/28/07	5:14:49	636	623	340	454	409	0
09/28/07	5:15:19	634	620	335	451	406	0
09/28/07	5:15:49	631	618	334	449	402	0
09/28/07	5:16:19	631	613	332	447	402	0
09/28/07	5:16:49	629	612	331	446	403	0
09/28/07	5:17:19	628	612	334	446	400	0
09/28/07	5:17:49	625	610	334	446	400	0
09/28/07	5:18:19	622	609	356	439	375	0
09/28/07	5:18:49	617	607	383	434	353	0
09/28/07	5:19:19	615	608	407	428	345	0
09/28/07	5:19:49	611	607	424	423	341	0
09/28/07	5:20:19	606	604	438	425	339-	0
09/28/07	5:20:49	604	608	449	423	335	0
09/28/07	5:21:19	603	606	461	419	332	0
09/28/07	5:21:49	602	607	468	417	330	0
09/28/07	5:22:20	599	605	475	413	329	0
09/28/07	5:22:50	597	604	479	415	328	0
09/28/07	5:23:20	594	602	482	414	329	0
09/28/07	5:23:50	594	603	486	413	324	0
09/28/07	5:24:20	592	604	488	408	323	0
09/28/07	5:24:50	591	604	491	403	321	0
09/28/07	5:25:20	590	602	492	399	319	0
09/28/07	5:25:50	587	600	492	401	320	0
09/28/07	5:26:20	586	598	493	403	318	0

Time to 600 °F 1:53 (113 Min)
Time to 700 °F 1:25 (85 Min)

**Cycle Time
143 Minutes**

TRAY # D-94917

Event Date	Event Time	14-Tit-9001	14-Tit-9002	14-Tit-9003	14-Tit-9004	14-Tit-9005
10/10/07	15:44:19	214	232	193	158	0
10/10/07	15:44:49	447	469	407	159	0
10/10/07	15:45:19	765	707	744	339	0
10/10/07	15:45:49	997	867	953	483	0
10/10/07	15:46:19	1119	971	1061	558	0
10/10/07	15:46:49	1176	1030	1112	583	0
10/10/07	15:47:19	1207	1062	1129	595	0
10/10/07	15:47:49	1220	1083	1137	604	0
10/10/07	15:48:19	1223	1091	1129	607	0
10/10/07	15:48:49	1223	1098	1124	607	0
10/10/07	15:49:19	1224	1100	1117	610	0
10/10/07	15:49:49	1224	1100	1108	609	0
10/10/07	15:50:19	1232	1024	1090	659	0
10/10/07	15:50:49	1226	940	1073	710	0
10/10/07	15:51:19	1223	890	1061	729	0
10/10/07	15:51:49	1220	848	1044	733	0
10/10/07	15:52:19	1212	823	1033	735	0
10/10/07	15:52:49	1209	803	1022	738	0
10/10/07	15:53:19	1203	786	1014	738	0
10/10/07	15:53:49	1197	768	1004	738	0
10/10/07	15:54:19	1197	759	998	740	0
10/10/07	15:54:49	1190	747	991	738	0
10/10/07	15:55:19	1181	733	978	734	0
10/10/07	15:55:49	1178	727	969	735	0
10/10/07	15:56:20	1172	721	957	733	0
10/10/07	15:56:50	1166	710	954	732	0
10/10/07	15:57:20	1163	699	947	731	0
10/10/07	15:57:50	1159	696	944	731	0
10/10/07	15:58:20	1156	692	940	731	0
10/10/07	15:58:50	1151	687	933	731	0
10/10/07	15:59:20	1143	683	925	730	0
10/10/07	15:59:50	1137	679	921	729	0
10/10/07	16:00:21	1135	675	914	728	0
10/10/07	16:00:51	1128	671	908	725	0
10/10/07	16:01:21	1128	667	904	723	0
10/10/07	16:01:51	1123	662	898	723	0
10/10/07	16:02:21	1119	656	892	721	0
10/10/07	16:02:51	1114	652	889	722	0
10/10/07	16:03:21	1107	647	881	719	0
10/10/07	16:03:51	1104	643	875	716	0
10/10/07	16:04:21	1101	642	875	719	0
10/10/07	16:04:51	1099	637	869	718	0
10/10/07	16:05:21	1096	631	863	714	0
10/10/07	16:05:51	1090	626	859	715	0
10/10/07	16:06:22	1085	621	853	712	0
10/10/07	16:06:52	1078	618	848	709	0
10/10/07	16:07:22	1072	613	842	708	0
10/10/07	16:07:52	1069	607	839	707	0
10/10/07	16:08:22	1068	606	840	706	0

TRAY # D-94917

Event Date	Event Time	14-Tit-9001	14-Tit-9002	14-Tit-9003	14-Tit-9004	14-Tit-9005
10/10/07	16:08:52	1066	602	833	705	0
10/10/07	16:09:22	1063	598	831	702	0
10/10/07	16:09:52	1058	595	828	700	0
10/10/07	16:10:22	1054	592	823	699	0
10/10/07	16:10:52	1050	587	820	699	0
10/10/07	16:11:22	1046	587	817	698	0
10/10/07	16:11:52	1044	585	809	694	0
10/10/07	16:12:22	1042	580	808	694	0
10/10/07	16:12:53	1035	578	803	691	0
10/10/07	16:13:23	1032	576	802	689	0
10/10/07	16:13:53	1026	573	798	689	0
10/10/07	16:14:23	1026	570	793	688	0
10/10/07	16:14:53	1021	566	790	685	0
10/10/07	16:15:23	1017	563	787	684	0
10/10/07	16:15:53	1013	561	781	679	0
10/10/07	16:16:23	1011	556	777	680	0
10/10/07	16:16:53	1007	553	774	678	0
10/10/07	16:17:23	1005	552	774	678	0
10/10/07	16:17:53	1001	548	768	674	0
10/10/07	16:18:23	996	544	762	669	0
10/10/07	16:18:53	993	541	760	668	0
10/10/07	16:19:23	989	540	759	669	0
10/10/07	16:19:53	986	535	754	666	0
10/10/07	16:20:23	982	533	749	665	0
10/10/07	16:20:53	979	532	746	663	0
10/10/07	16:21:24	973	530	745	662	0
10/10/07	16:21:54	969	526	739	660	0
10/10/07	16:22:24	970	524	740	658	0
10/10/07	16:22:55	965	522	735	655	0
10/10/07	16:23:25	960	519	729	654	0
10/10/07	16:23:55	958	517	727	652	0
10/10/07	16:24:25	955	512	726	648	0
10/10/07	16:24:55	949	511	723	648	0
10/10/07	16:25:26	949	511	719	647	0
10/10/07	16:25:56	946	511	719	646	0
10/10/07	16:26:27	946	510	716	646	0
10/10/07	16:26:57	942	507	713	643	0
10/10/07	16:27:30	934	503	708	641	0
10/10/07	16:28:01	931	499	704	639	0
10/10/07	16:28:31	928	497	702	637	0
10/10/07	16:29:01	925	494	697	633	0
10/10/07	16:29:31	923	492	695	632	0
10/10/07	16:30:01	919	489	694	630	0
10/10/07	16:30:31	917	487	690	630	0
10/10/07	16:31:01	917	485	687	629	0
10/10/07	16:31:31	914	484	687	626	0
10/10/07	16:32:01	910	483	683	626	0
10/10/07	16:32:31	908	481	682	625	0
10/10/07	16:33:01	906	478	679	623	0

TRAY # D-94917

Event Date	Event Time	14-Tit-9001	14-Tit-9002	14-Tit-9003	14-Tit-9004	14-Tit-9005
10/10/07	16:33:31	902	478	680	622	0
10/10/07	16:34:01	899	479	680	623	0
10/10/07	16:34:31	899	479	677	623	0
10/10/07	16:35:01	893	475	673	619	0
10/10/07	16:35:31	892	465	666	619	0
10/10/07	16:36:01	889	455	659	615	0
10/10/07	16:36:31	889	450	659	613	0
10/10/07	16:37:01	887	448	658	612	0
10/10/07	16:37:31	884	444	655	612	0
10/10/07	16:38:01	880	442	655	610	0
10/10/07	16:38:31	880	440	652	607	0
10/10/07	16:39:01	878	439	648	607	0
10/10/07	16:39:31	874	438	648	606	0
10/10/07	16:40:01	874	438	645	605	0
10/10/07	16:40:31	873	438	644	604	0
10/10/07	16:41:01	867	436	645	603	0
10/10/07	16:41:31	866	435	640	601	0
10/10/07	16:42:01	862	434	637	599	0
10/10/07	16:42:31	862	430	634	596	0
10/10/07	16:43:01	858	430	633	594	0
10/10/07	16:43:31	857	429	632	591	0
10/10/07	16:44:01	854	426	630	591	0
10/10/07	16:44:31	852	422	625	589	0
10/10/07	16:45:01	851	419	622	587	0
10/10/07	16:45:32	848	419	620	587	0
10/10/07	16:46:02	845	417	619	583	0
10/10/07	16:46:32	840	417	616	583	0
10/10/07	16:47:02	839	419	617	582	0
10/10/07	16:47:32	837	415	614	580	0
10/10/07	16:48:02	836	413	613	579	0
10/10/07	16:48:32	833	413	612	577	0
10/10/07	16:49:02	831	409	610	574	0
10/10/07	16:49:32	825	408	607	573	0
10/10/07	16:50:02	824	406	605	572	0
10/10/07	16:50:32	819	404	604	567	0
10/10/07	16:51:02	816	402	600	566	0
10/10/07	16:51:32	814	400	595	564	0
10/10/07	16:52:02	812	399	593	561	0
10/10/07	16:52:32	810	397	591	561	0
10/10/07	16:53:02	808	396	588	559	0
10/10/07	16:53:33	804	393	586	559	0
10/10/07	16:54:03	799	392	584	556	0
10/10/07	16:54:33	802	392	584	557	0
10/10/07	16:55:03	798	391	583	555	0
10/10/07	16:55:33	796	390	582	552	0
10/10/07	16:56:03	792	388	579	551	0
10/10/07	16:56:33	789	386	575	550	0
10/10/07	16:57:04	788	383	573	548	0
10/10/07	16:57:34	784	381	570	546	0

TRAY # D-94917

Event Date	Event Time	14-Tit-9001	14-Tit-9002	14-Tit-9003	14-Tit-9004	14-Tit-9005
10/10/07	16:58:04	781	378	567	543	0
10/10/07	16:58:34	779	376	565	541	0
10/10/07	16:59:04	776	375	564	540	0
10/10/07	16:59:34	772	373	562	538	0
10/10/07	17:00:04	773	371	559	537	0
10/10/07	17:00:34	769	369	558	537	0
10/10/07	17:01:04	769	368	558	534	0
10/10/07	17:01:34	766	369	555	534	0
10/10/07	17:02:05	761	367	553	530	0
10/10/07	17:02:35	757	365	550	530	0
10/10/07	17:03:05	755	364	548	529	0
10/10/07	17:03:35	752	362	546	525	0
10/10/07	17:04:05	750	361	543	523	0
10/10/07	17:04:35	746	361	543	522	0
10/10/07	17:05:05	746	360	541	520	0
10/10/07	17:05:35	744	359	539	519	0
10/10/07	17:06:05	743	358	538	519	0
10/10/07	17:06:35	740	357	535	516	0
10/10/07	17:07:05	737	355	535	516	0
10/10/07	17:07:35	736	354	533	514	0
10/10/07	17:08:05	734	354	533	513	0
10/10/07	17:08:35	731	352	529	511	0
10/10/07	17:09:05	730	351	527	509	0
10/10/07	17:09:35	725	350	524	507	0
10/10/07	17:10:05	721	347	522	506	0
10/10/07	17:10:35	721	345	520	505	0
10/10/07	17:11:05	720	343	517	504	0
10/10/07	17:11:35	717	342	515	501	0
10/10/07	17:12:05	714	342	513	501	0
10/10/07	17:12:35	714	339	511	499	0
10/10/07	17:13:05	711	339	510	498	0
10/10/07	17:13:35	709	340	509	496	0
10/10/07	17:14:05	710	339	508	496	0
10/10/07	17:14:35	705	340	506	494	0
10/10/07	17:15:05	705	336	503	493	0
10/10/07	17:15:35	705	335	501	493	0
10/10/07	17:16:05	702	332	501	490	0
10/10/07	17:16:35	700	331	499	489	0
10/10/07	17:17:05	699	330	497	489	0
10/10/07	17:17:35	694	330	495	486	0
10/10/07	17:18:05	692	327	494	485	0
10/10/07	17:18:35	689	327	490	483	0
10/10/07	17:19:05	684	325	488	482	0
10/10/07	17:19:35	684	324	486	480	0
10/10/07	17:20:05	681	322	484	479	0
10/10/07	17:20:35	681	321	481	477	0
10/10/07	17:21:05	679	320	481	476	0
10/10/07	17:21:35	675	318	480	475	0
10/10/07	17:22:05	674	316	481	473	0

TRAY # D-94917

Event Date	Event Time	14-Tit-9001	14-Tit-9002	14-Tit-9003	14-Tit-9004	14-Tit-9005
10/10/07	17:22:35	673	317	481	473	0
10/10/07	17:23:05	672	316	479	471	0
10/10/07	17:23:35	670	317	478	470	0
10/10/07	17:24:05	668	316	478	469	0
10/10/07	17:24:35	666	314	477	468	0
10/10/07	17:25:05	663	310	474	466	0
10/10/07	17:25:35	660	307	472	465	0
10/10/07	17:26:05	658	309	470	465	0
10/10/07	17:26:35	656	309	471	464	0
10/10/07	17:27:05	655	308	470	462	0
10/10/07	17:27:35	653	307	468	460	0
10/10/07	17:28:05	652	305	466	458	0
10/10/07	17:28:35	650	300	462	457	0
10/10/07	17:29:05	645	300	459	456	0
10/10/07	17:29:35	643	299	460	454	0
10/10/07	17:30:05	641	296	458	452	0
10/10/07	17:30:35	638	296	456	452	0
10/10/07	17:31:05	635	295	454	450	0
10/10/07	17:31:35	633	294	452	449	0
10/10/07	17:32:05	631	293	450	448	0
10/10/07	17:32:35	631	293	450	447	0
10/10/07	17:33:05	629	292	450	446	0
10/10/07	17:33:35	627	289	447	445	0
10/10/07	17:34:05	625	289	445	442	0
10/10/07	17:34:35	624	306	447	422	0
10/10/07	17:35:05	624	312	446	419	0
10/10/07	17:35:35	623	306	443	428	0
10/10/07	17:36:05	623	320	444	415	0
10/10/07	17:36:35	624	313	442	422	0
10/10/07	17:37:05	623	336	436	400	0
10/10/07	17:37:35	623	361	438	386	0
10/10/07	17:38:05	622	346	439	407	0
10/10/07	17:38:35	621	363	436	393	0
10/10/07	17:39:05	619	389	432	375	0
10/10/07	17:39:35	619	412	428	364	0
10/10/07	17:40:05	619	430	425	360	0
10/10/07	17:40:35	616	446	423	357	0
10/10/07	17:41:05	617	456	418	354	0
10/10/07	17:41:35	615	464	418	352	0
10/10/07	17:42:05	614	474	421	353	0
10/10/07	17:42:35	613	480	421	351	0
10/10/07	17:43:06	612	486	421	350	0
10/10/07	17:43:36	612	489	417	347	0
10/10/07	17:44:06	615	492	413	345	0
10/10/07	17:44:36	616	494	411	343	0
10/10/07	17:45:06	614	496	412	342	0
10/10/07	17:45:36	612	497	411	342	0
10/10/07	17:46:06	612	499	411	339	0
10/10/07	17:46:36	611	499	410	339	0

TRAY # D-94917

Event Date	Event Time	14-Tit-9001	14-Tit-9002	14-Tit-9003	14-Tit-9004	14-Tit-9005
10/10/07	17:47:06	610	501	410	338	0
10/10/07	17:47:37	611	502	409	337	0
10/10/07	17:48:07	612	502	404	335	0
10/10/07	17:48:37	612	501	399	334	0
10/10/07	17:49:07	610	502	399	332	0
10/10/07	17:49:37	609	502	399	332	0
10/10/07	17:50:07	609	503	399	331	0
10/10/07	17:50:37	609	502	397	329	0
10/10/07	17:51:07	608	502	397	329	0
10/10/07	17:51:37	607	502	397	327	0
10/10/07	17:52:07	605	502	397	325	0
10/10/07	17:52:37	605	503	397	324	0
10/10/07	17:53:07	606	503	396	323	0
10/10/07	17:53:37	606	503	391	322	0
10/10/07	17:54:07	606	503	391	322	0
10/10/07	17:54:37	606	502	389	320	0
10/10/07	17:55:07	605	503	384	319	0
10/10/07	17:55:37	603	501	381	318	0
10/10/07	17:56:07	604	501	380	316	0
10/10/07	17:56:37	604	502	381	315	0
10/10/07	17:57:07	603	501	378	314	0
10/10/07	17:57:37	603	501	378	314	0
10/10/07	17:58:07	601	500	379	313	0
10/10/07	17:58:37	602	501	378	311	0
10/10/07	17:59:07	599	501	376	311	0

Time to 600 °F 2:14 (134 Min)
Time to 700 °F 1:32 (92 Min)

**Cycle Time 143
Minutes**

TRAY # D-79298

Event Date	Event Time	14-Tit-9001	14-Tit-9002	14-Tit-9003	14-Tit-9004	14-Tit-9005
10/10/07	18:34:11	326	368	286	194	0
10/10/07	18:34:42	633	620	585	242	0
10/10/07	18:35:12	892	778	825	472	0
10/10/07	18:35:42	1043	886	957	569	0
10/10/07	18:36:12	1125	961	1027	613	0
10/10/07	18:36:42	1165	1006	1062	623	0
10/10/07	18:37:12	1184	1035	1074	627	0
10/10/07	18:37:42	1192	1051	1077	627	0
10/10/07	18:38:12	1203	1060	1075	628	0
10/10/07	18:38:42	1205	1063	1067	629	0
10/10/07	18:39:12	1207	1063	1055	624	0
10/10/07	18:39:42	1212	1058	1058	631	0
10/10/07	18:40:12	1219	1007	1078	683	0
10/10/07	18:40:42	1220	963	1086	710	0
10/10/07	18:41:12	1220	939	1090	726	0
10/10/07	18:41:42	1216	924	1092	732	0
10/10/07	18:42:12	1211	906	1078	747	0
10/10/07	18:42:42	1199	886	1052	755	0
10/10/07	18:43:12	1192	863	1037	753	0
10/10/07	18:43:42	1184	849	1020	752	0
10/10/07	18:44:12	1180	834	1014	752	0
10/10/07	18:44:42	1173	822	1006	752	0
10/10/07	18:45:12	1167	816	1001	752	0
10/10/07	18:45:42	1163	809	995	752	0
10/10/07	18:46:12	1163	800	994	749	0
10/10/07	18:46:42	1160	796	992	749	0
10/10/07	18:47:12	1158	792	992	749	0
10/10/07	18:47:42	1154	789	989	751	0
10/10/07	18:48:12	1150	788	987	747	0
10/10/07	18:48:42	1150	785	991	746	0
10/10/07	18:49:12	1148	790	999	743	0
10/10/07	18:49:42	1144	787	994	747	0
10/10/07	18:50:12	1137	778	978	748	0
10/10/07	18:50:42	1132	771	973	744	0
10/10/07	18:51:12	1127	766	966	744	0
10/10/07	18:51:42	1126	760	963	744	0
10/10/07	18:52:12	1118	753	949	743	0
10/10/07	18:52:42	1110	740	940	739	0
10/10/07	18:53:12	1100	738	929	737	0
10/10/07	18:53:42	1097	728	919	734	0
10/10/07	18:54:12	1094	710	908	733	0
10/10/07	18:54:42	1084	701	895	729	0
10/10/07	18:55:12	1077	684	881	726	0
10/10/07	18:55:42	1073	680	872	723	0
10/10/07	18:56:12	1065	666	866	720	0
10/10/07	18:56:42	1058	663	856	716	0
10/10/07	18:57:12	1053	653	847	713	0
10/10/07	18:57:42	1049	645	841	710	0
10/10/07	18:58:12	1044	638	837	707	0